

# MICROpendium

Volume 4 Number 11

December 1987

\$2.00

## Inside

- Custom labels for all occasions
- Putting XBASIC into the console
- Music Maker on disk

## Reviews

- Remind Me
- Certificate 99
- MY-Art & The Mouse

## Columns

- Regena on BASIC
- Mike Dodd on Geneve
- Charles Kirkwood on c99
- Lutz Winkler on Forth

▲ ▲ ▲ ▲ SEASONS GREETINGS ▲ ▲ ▲ ▲  
▲ To: ALL ▲  
▲ WITH ♥ LOVE ♥ FROM ▲  
▲ THE ROUND ROCK GANG ▲  
▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲

☺ ☺ ☺ ☺ HAVE A HAPPY ☺ ☺ ☺ ☺  
☺ To: GRANDSON ☺ ☺ ☺ ☺  
☺ WITH ♥ LOVE ♥ FROM ☺ ☺ ☺ ☺  
☺ GRANDMA & GRANDPA ☺ ☺ ☺ ☺  
☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺

♪ ♪ ♪ ♪ HAPPY BIRTHDAY ♪ ♪ ♪ ♪  
♪ To: JENNIE ♪ ♪ ♪ ♪  
♪ WITH ♥ LOVE ♥ FROM ♪ ♪ ♪ ♪  
♪ CRAIG ♪ ♪ ♪ ♪  
♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪ ♪

✱ ✱ ✱ ✱ BON VOYAGE ✱ ✱ ✱ ✱  
✱ To: CHRIS ✱ ✱ ✱ ✱  
✱ WITH ♥ LOVE ♥ FROM ✱ ✱ ✱ ✱  
✱ ISABELLA ✱ ✱ ✱ ✱  
✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱ ✱

\* \* \* \* MERRY CHRISTMAS \* \* \* \*  
\* To: RUDIE \* \* \* \*  
\* WITH ♥ LOVE ♥ FROM \* \* \* \*  
\* NICK \* \* \* \*  
\* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*

♥ ♥ ♥ ♥ BE MY VALENTINE ♥ ♥ ♥ ♥  
♥ To: FRANKIE ♥ ♥ ♥ ♥  
♥ WITH ♥ LOVE ♥ FROM ♥ ♥ ♥ ♥  
♥ JOHNNIE ♥ ♥ ♥ ♥  
♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥

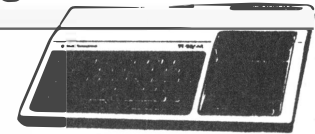
\$ \$ \$ \$ MANY HAPPY RETRNS \$ \$ \$ \$  
\$ To: I.R.S. \$ \$ \$ \$  
\$ WITH ♥ LOVE ♥ FROM \$ \$ \$ \$  
\$ BILL BRADLEY \$ \$ \$ \$  
\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$

.....Texas Instruments TI-99/4A — COMPUTERS, COMPONENTS AND SOFTWARE.....

# TEX+COMP<sup>™</sup>

America's Number One TI computer retailer  
TI-99/4 PRODUCTS AT PROFESSIONAL PRICES

## The largest selection of software for the TI-99/4A



Tex Comp continues to stock the world's largest selection of TI Software. The TI Software library on module, disk and cassette was developed from 1979-1983 at a cost of millions and is considered the best in the home computer software field. TI utilized the talents of such industry leaders as Scott Forsman, Milton Bradley, Microsoft Corp., Scott Adams, Addison Wesley Publishing, DLM, Milliken Publishing, Scholastic Inc., Imagic, Spinnaker and the list goes on and on.

### MANAGEMENT

#### INFORMATION MANAGEMENT MODULES

PHM 3006	Home Financial Decisions	4.95
PHM 3007	Household Budget Mgt.	4.95
PHM 3013	Personal Record Keeping	15.95
PHM 3016	Tax/Inves Rec Keep (Disk Req.)	4.95
PHM 3022	Personal Real Estate	4.95
PHM 3044	Personal Report Generator	10.95
PHM 3035	Terminal Emulator II	9.95
PHM 3111	TI Writer (word processing)	29.95
PHM 3113	Multipian (spreadsheet)	24.95

#### DISKETTE PROGRAMS

PHD 5001	Mailing List (PIO Upgrade)	12.95
PHD 5003	Personal Financial Aids	9.95
PHD 5021	Checkbook Manager	9.95
PHD 5022	Finance Manager	19.95
PHD 5024	Inventory Management	19.95
PHD 5027	Invoice Management	19.95
PHD 5029	Cash Management	19.95
PHD 5038	Lease/Purchase Decisions	9.95
PHD 5075	TI Writer/Multipian Upgrade	9.95

#### CASSETTE PROGRAMS

PHT 5003	Personal Financial Aids	9.95
PHT 6036	Lease/Purchase Decisions	9.95

### EDUCATION

#### MODULES

PHM 3002	Early Learning Fun	4.95
PHM 3003	Beginning Grammar	4.95
PHM 3010	Physical Fitness	9.95
PHM 3020	Music Maker	9.95
PHM 3021	Weight Control & Nutrition	10.95
PHM 3109	TI Logo II (32K req.)	19.95
PHM 3015	Early Reading (Speech)	9.95
PHM 3043	Reading Fun	9.95
PHM 3046	Reading On	9.95
PHM 3047	Reading Roundup	9.95
PHM 3048	Reading Rally	9.95
PHM 3082	Reading Flight	9.95
PHM 3027	Addition & Subtraction I	9.95
PHM 3028	Addition & Subtraction II	9.95
PHM 3029	Multiplication I	9.95
PHM 3049	Division I	9.95
PHM 3050	Numeration I	9.95
PHM 3051	Numeration II	9.95
PHM 3059	Scholastic Spelling 3	9.95
PHM 3060	Scholastic Spelling 4	9.95
PHM 3061	Scholastic Spelling 5	9.95
PHM 3062	Scholastic Spelling 6	9.95
PHM 3088	Computer Math Games VI	9.95
PHM 3090	Milliken Addition	9.95
PHM 3091	Milliken Subtraction	9.95
PHM 3092	Milliken Multiplication	9.95
PHM 3093	Milliken Division	9.95
PHM 3094	Milliken Integers	9.95
PHM 3098	Milliken Number Readiness	4.95
PHM 3099	Milliken Laws of Arithmetic	4.95
PHM 3100	Milliken Equations	4.95
PHM 3101	Milliken Meas of Formulas	4.95
PHM 3114	Alligator Mix	6.95
PHM 3115	Allen Addition	6.95
PHM 3117	Dragon Mix	6.95
PHM 3119	Meteor Multiplication	6.95
PHM 3118	Minus Mission	6.95
PHM 3177	Face Maker	9.95
PHM 3178	Story Machine	9.95

#### DISKETTE PROGRAMS

PHD 5009	Music Skills Trainer	9.95
PHD 5018	Market Simulation	9.95
PHD 5030	Speak & Spell (Speech Ed Req.)	9.95
PHD 5031	Speak & Math (TE II Req.)	9.95
PHD 5042	Spell Writer (TE II Req.)	9.95
PHD 5026	Bridge Bidding I	9.95
PHD 5039	Bridge Bidding II	9.95
PHD 5041	Bridge Bidding III	9.95
PHD 5020	Music Maker Demo (Module Req.)	9.95

#### CASSETTE PROGRAMS

PHT 6009	See disk versions for requirements i.e. TEII	8.95
PHT 6011	Music Skills Trainer	8.95
PHT 6018	Computer Music Box	8.95
PHT 6031	Market Simulation	8.95
PHT 6042	Speak & Math	9.95
PHT 6026	Spell Writer	9.95
PHT 6026	Bridge Bidding I	9.95
PHT 6039	Bridge Bidding II	9.95
PHT 6041	Bridge Bidding III	9.95

#### BRIGHT BEGINNINGS SERIES (MBX REQUIRED)

PHM 3154	Terry Turtle's Adventure	4.95
PHM 3155	I'm Hiding	4.95

### HOME ENTERTAINMENT

#### MODULES

PHM 3023	Hunt the Wumpus	4.95
PHM 3024	Indoor Soccer	8.95
PHM 3025	Mind Challengers	10.95
PHM 3030	Amazing	4.95
PHM 3052	Tombstone City	4.95
PHM 3053	TI Invaders	4.95
PHM 3054	Car Wars	4.95
PHM 3057	Munch Man	4.95
PHM 3056	Alpiner	4.95
PHM 3110	Chisholm Trail	5.95
PHM 3112	Parsec	4.95
PHM 3031	The Attack	4.95
PHM 3032	Blasto	4.95
PHM 3034	Hustle	6.95
PHM 3036	Zero Zap	8.95
PHM 3037	Hangman	8.95
PHM 3038	Connect Four	8.95
PHM 3067	Othello	9.95

### SPECIAL OFFER

Brand New Original Black & Silver TI-99/4A console only \$79.95. Runs *all* third party modules and comes with 1 year TI factory warranty.

\*Shipping, handling & insurance on this special offer is \$10.00 (Continental U.S.) to any UPS deliverable address. HA, AL, Canada and APO slightly higher.

### SPECIALS

Original TI Joysticks  
\$7.95 (pair)

Replacement 99/4A  
Keyboards  
(plug in connection)  
\$7.95

Replacement Console  
Power Supply  
(external transformer)  
\$9.95

Cassette Cable  
\$5.95

Console Dust Covers  
\$7.95

Now Back in Stock—limited quantities!

### TUNNELS OF DOOM

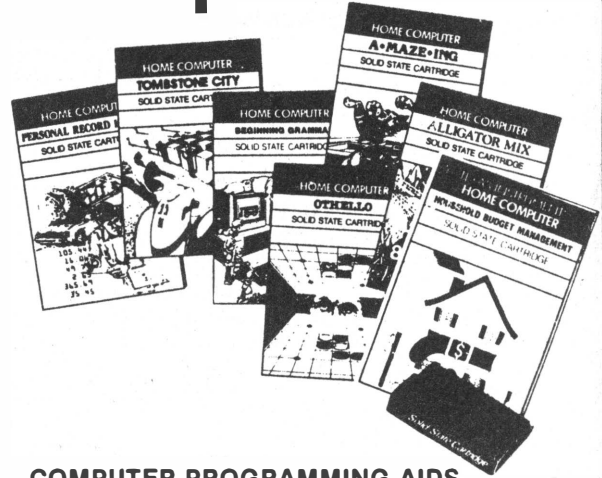
Module & disk or cassette (specify) \$9.95

PHM 3042

# Texas Instruments TI-99/4A Home Computer

Tex-Comp purchased TI's inventory of these outstanding titles in order to continue its support of the TI-99/4A user, and also continually acquires inventory from leading retailers and distributors who have discontinued home computer sales.

With its five warehouses and financial resources, Tex-Comp has been able to assure you, the TI-99/4A user continued support.



PHM 3041T Adventure & Pirate Adv. (Cass.) ..... 6.95  
PHM 3041D Adventure & Pirate Adv. (Disk) ..... 6.95

#### ADVENTURE SERIES ON CASS OR DISK (SPECIFY)

Adventureland ..... 9.95  
Mission Impossible ..... 9.95  
Voodoo Castle ..... 9.95  
The Count ..... 9.95  
Strange Odyssey ..... 9.95  
Mystery Fun House ..... 9.95  
Pyramid of Doom ..... 9.95  
Ghost Town ..... 9.95  
Savage Island I & II ..... 9.95  
Golden Voyage ..... 9.95  
Ironheart Adventure (Not Scott Adams) ..... 9.95

★ SPECIAL ALL ABOVE ADVENTURES ON DISK OR

CASSETTE INCLUDING IRONHEART ..... 17.95

★ SPECIAL ALL FOUR + 2 BONUS ADVENTURES & HINT BOOK ..... 17.95

Specify Disk or Cassette

★ SPECIAL BOTH ADVENTURE SETS + MODULE & HINT BOOK ..... 29.95

Specify Disk or Cassette

#### DISKETTE PROGRAMS

PHD 5002 TI-Trek (with new TEII Ver.) ..... 9.95  
PHD 5010 Mystery Melody ..... 9.95  
PHD 5015 Oldies But Goodies I ..... 9.95  
PHD 5017 Oldies But Goodies II ..... 9.95  
PHD 5025 Sat. Night Bingo (Speech) Ex-Basic ..... 9.95  
PHD 5037 Draw Poker (Ex-Basic Req.) ..... 9.95

#### CASSETTE PROGRAMS

PHT 6002 TI-Trek TE-II & Speech ..... 9.95  
PHT 6010 Mystery Melody ..... 7.95  
PHT 6015 Oldies But Goodies I ..... 7.95  
PHT 6017 Oldies But Goodies II ..... 7.95  
PHT 6028 Sat. Night Bingo (Speech) Ex-Basic ..... 7.95  
PHT 6037 Draw Poker (Ex-Basic Req.) ..... 7.95

#### TI ARCADE STYLE MODULES AND RECENT RELEASES

PHM 3149 Space Bandit (MBX Expansion System Recommended) ..... 9.95

PHM 3220 Microsurgeon ..... 9.95  
PHM 3219 Super Demon Attack ..... 9.95  
PHM 3224 Moonsweeper ..... 9.95  
PHM 3229 Hopper ..... 4.95  
PHM 3233 Burgertime ..... 9.95  
PHM 3194 Jawbreaker II ..... 5.95  
PHM 3227 Congo Bongo ..... 15.95  
PHM 3168 Treasure Island ..... 11.95  
PHM 3189 Return to Pirates Island ..... 11.95  
PHM 3226 Buck Rodgers ..... 15.95  
PHM 3225 StarTrek ..... 15.95  
PHM 3222 Fathom ..... 9.95  
PHM 3146 Munchmobile ..... 11.95  
PHM 3197 Stymolds ..... 15.95  
PHM 3131 Moonmine ..... 9.95

NEW LOW  
PRICE

NEW LOW  
PRICE

## COMPUTER PROGRAMMING AIDS

#### MODULES

New Super Extended Basic ..... 59.95  
PHM 3055 Editor Assembler ..... 19.95  
PHM 3058 Mini Memory (With Writer) ..... 38.95

#### DISKETTE PROGRAMS

PHD 5007 Teach Yourself 99/4A Basic ..... 9.95  
PHD 5019 Teach Yourself Ex-Basic ..... 9.95  
PHD 5004 Programming Aids I ..... 9.95  
PHD 5005 Programming Aids II ..... 9.95  
PHD 5012 Programming Aids III ..... 9.95  
PHD 5077 Programming Aids I, II, & III ..... 24.95  
PHD 5067 Beginning Basic Tutor ..... 9.95  
PHD 5076 Text to Speech (English) ..... 9.95  
PHD 5098 TI Forth (Ed Assem Req.) ..... 19.95  
PHD 5078 TI Forth Demo Disk (Ed Assem) ..... 9.95  
PHD 5079 Forth Source Code (2 Disks) ..... 11.95

#### CASSETTE PROGRAMS

PHT 6006 Programming Aids I ..... 6.95  
PHT 6007 Teach Yourself 99/4A Basic ..... 6.95  
PHT 6019 Teach Yourself Ex-Basic ..... 6.95  
PHT 6067 Beginning Basic Tutor ..... 6.95

## MATH AND ENGINEERING

#### DISKETTE PROGRAMS

PHD 5006 Math Routine Library ..... 9.95  
PHD 5008 Electrical Engineering Lib. ..... 9.95  
PHD 5013 Graphing Package ..... 9.95  
PHD 5016 Structural Engineering Lib. ..... 9.95  
PHD 5044 AC Circuit Analysis ..... 9.95

#### CASSETTE PROGRAMS

PHT 6006 Math Routine Library ..... 8.95  
PHT 6008 Electrical Engineering Lib. ..... 8.95  
PHT 6013 Graphing Package ..... 8.95  
PHT 6016 Structural Engineering Lib. ..... 8.95  
PHT 6044 AC Circuit Analysis ..... 8.95

## TI-COUNT SMALL BUSINESS SOFTWARE

#### SPECIAL PACKAGE

General Ledger  
Accounts Receivable  
Accounts Payable  
Inventory  
Payroll  
Mail System

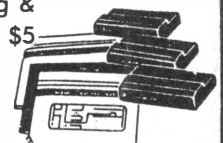
ALL 6 FOR \$99.95

Send for new 1988 Tex-Comp catalog & buyer's guide only \$2.00 (comes with \$5 savings certificate)

**Drastic Reductions**



VISA and MASTERCARD  
HOLDERS CALL DIRECT  
**(818) 366-6631**  
24 Hour Order Line



Send order and make checks payable to:

**TEX+COMP**

P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER

**TERMS:** All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4½%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6½% sales tax.

# Contents

## MICROpendium

MICROpendium is published 12 times annually for \$20 per year by Burns-Koloen Communications Inc., 16606 Terrace Dr., Austin, TX 78728. Application to Mail at Second-Class Postage Rates is Pending at Round Rock, Texas. POSTMASTER: Send address changes to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

No information published in the pages of MICROpendium may be used without permission of the publisher. Computer user groups that have signed exchange agreements with MICROpendium may excerpt articles appearing in MICROpendium without prior approval.

While all efforts are directed at providing factual and true information in published articles, the publisher cannot accept responsibility for errors that appear in advertising or text appearing in MICROpendium. The inclusion of brand names in text does not constitute an endorsement of any product by the publisher. Statements published by MICROpendium which reflect erroneously on individuals, products or companies will be corrected upon contacting the publisher.

Unless the author specifies, letters will be treated as unconditionally assigned for publication, copyright purposes and use in any other publication or brochure and are subject to MICROpendium's unrestricted right to edit and comment.

Display advertising deadlines and rates are available upon request.

All correspondence should be mailed to MICROpendium at P.O. Box 1343, Round Rock, TX 78680. We cannot take responsibility for unsolicited manuscripts but will give consideration to anything sent to the above address. Manuscripts will be returned only if a self-addressed stamped envelope is included.

Foreign subscriptions are \$25.25 (Canada and Mexico); \$23.50, surface mail to other countries; \$37 airmail to other countries.

All editions of MICROpendium are mailed from the Round Rock (Texas) Post Office.

Mailing address: P.O. Box 1343, Round Rock TX 78680

Telephone: (512) 255-1512

Source: TI4596

CompuServe: 75156,3270

Delphi TI NET: MICROPENDIUM

John Koloen.....Publisher  
Laura Burns.....Editor

## Table of Contents

### Regena on BASIC

The DEFinition statement.....Page 10

### c99

Functions and strings.....Page 12

### Music maker

December brings Beethoven's birthday, performances of the Nutcracker, and now this addition for the musically-minded...Page 16

### Labels with impact

Personalized greetings for every occasion.....Page 20

### Geneve video boards

Videoflex and "frame grabber" cards under development for use with the 9640.....Page 24

### Forth tips

Converting Forth screens to D/V 80 files.....Page 26

### Geneve 9640

Comparing a Geneve system and a TI with Mechatronics' 80-column card.....Page 27

### Reviews

Remind Me.....Page 30

Certificate 99.....Page 31

My-Art and Myarc Mouse.....Page 33

### Newsbytes

Rave 99's forthcoming memory card, a TI-IBM file transfer program, and Jim Swedlow's columns on disk.....Page 35

### User Notes

Pascal software from Sweden, putting XBASIC into your 4A console, and a picture demo writer.....Page 36

Classified.....Page 39



# Sensational Prices!!! ... On Our Most Popular Hardware and Software!!

## TOP QUALITY PERIPHERALS

from

### Mechatronic • CorComp • Myarc MECHATRONIC

TI Intern. This book contains a line by line listing of the TI 99/4A ROM and GROM chips with commentary.

41510 Book ..... \$17.95

Extended BASIC II Plus. This Extended BASIC includes built-in extended statement set and graphics mode. Graphic functions require 32K.

41488 Cartridge ..... \$79.95

80-Column Peripheral. Full 80 columns on your TI screen! Includes changes for 80 column TI-Writer and Multiplan.

41505 ..... \$219.95

### CORCOMP

Triple Tech. Board for PE Box includes clock/calendar, printer buffer, and speech synthesizer connection.

34643 ..... \$138.00

34639 Clock/Calendar. Stand-alone. .... \$79.95

34396 9900 32K Micro Memory. Stand-alone 32K. .... \$99.95

The Memory Plus series.

41070 256K Memory Plus Stand-Alone. .... \$219.00

41633 512K Memory Plus Stand-Alone. .... \$279.00

41051 256K Memory Plus Card. .... \$196.00

41065 512K Memory Plus Card. .... \$253.00

See "Best Selling Hardware" for more CorComp products.

### MYARC

34324 256K Card. .... \$179.00

42245 512K Card. .... \$239.00

38179 Extended BASIC Level IV. .... \$59.95

38395 256K Card with Extended BASIC Level IV. .... \$249.00

42231 512K Card with Extended BASIC Level IV. .... \$289.00

38198 512K Upgrade Kit for the 128K Card. .... \$109.95

See "Best Selling Hardware" for more Myarc products.

## MICROPENDIUM SPECIAL

### THE 39¢ DISKETTE!



Are you paying too much for diskettes? Try our first quality, prime, 5 1/4" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, SAVE! Disks are packaged in boxes of 50; each box contains 5 shrink-wrapped 10-packs that include diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

Box of 50

32391 SS, DD Diskettes ..... \$19.50

(39¢ each!)

32403 DS, DD Diskettes ..... \$24.50

(49¢ each!)

★★★★★★★★★★★★★★★★



### FREE!

### "EVERYTHING BOOK"

For the  
TI Home Computer

Order Item #25982

★★★★★★★★★★★★★★★★

AVAILABLE FROM  
YOUR FRIENDS AT



We gladly accept  
mail orders!

P.O. Box 6578  
South Bend, IN 46660

Questions? Call  
219/259-7051

NEW  
LOW  
PRICE!



## MicroPal® Extended BASIC

MicroPal's Extended BASIC package now includes two free software programs! Bestsellers **Typewriter** and **Name-It** from Extended Software are included in disk and cassette versions with complete manual — absolutely free!! You can immediately begin using the power of Extended BASIC for word processing and data base functions.



MicroPal Extended BASIC is unconditionally guaranteed to be 100% compatible with all programs written in TI Extended BASIC. With this powerful, high-level language, programmers can have automatic access to the 32K memory expansion, utilize sprite graphics for smooth motion and animation, auto-load disk based programs, and add speech with a 400 word built-in vocabulary! Package includes Extended BASIC on a convenient plug-in cartridge with 240 page manual. Sug. Retail \$89.95

32967

ONLY \$49.95!!

## MYARC GENEVE

NEW

## COMPUTER

Here's the good news... the new Myarc Geneve Computer you've been hearing about is to be shipping by press time! Imagine a computer that is 99/4A compatible but has the speed and incredible graphics capabilities that even IBM, Amiga, and Atari ST owners would envy!

The Geneve is truly a breakthrough... since it's offered on a card, and is compatible with your existing Expansion Box, disk controller, and RS-232 cards, its advanced features can be offered at a cost much lower than you would expect to pay for a system of this power and versatility!

Features include standard or enhanced keyboard, 80 column display, 640K of RAM plus 128K VDP RAM, and conversion instructions.

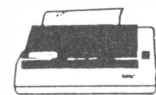
**\$Call Today for Lowest Price!\$**

## BEST-SELLING HARDWARE!

### STAR MICRONICS NX-10 PRINTER

41366 ..... \$189

Latest model! Draft quality at 120 cps, near letter quality at 30 cps. 5K print buffer.



42250 PARALLEL PRINTER INTERFACE ..... \$ 44.95

29784 CORCOMP RS-232 INTERFACE ..... \$127.00

29802 CORCOMP 9900

MICRO-EXPANSION SYSTEM ..... \$329.00

MYARC or CORCOMP RS-232 CARD ..... \$ 79.95

32972 MYARC DISK CONTROLLER CARD ..... \$CALL

29770 CORCOMP DISK

CONTROLLER CARD ..... SALE! \$149.95

13315 CORCOMP 32K MEMORY CARD ..... \$119.95

20164 BOX WITH POWER SUPPLY

for external disk drive ..... \$ 59.95

31173 WICO 3-

GATELOCK JOYSTICK ..... \$ 24.95

10285 TI JOYSTICK ADAPTER ..... \$ 4.95

42442 TAC 5™ JOYSTICK. Requires TI Adapter ..... \$ 14.95

42086 SLIK STICK™ JOYSTICK. Requires TI Adapter \$ 6.95

13329 NAVARONE CARTRIDGE EXPANDER ..... \$ 24.95



SHIPPING CHARGES	
ORDER AMOUNT	CHARGE
less than \$20.00	\$3.75
\$20.00-\$39.99	4.75
\$40.00-\$74.99	5.75
\$75.00-\$149.99	6.75
\$150.00-\$299.99	7.75
\$300 & up	8.75

Foreign Orders add \$4.00;  
heavy items ship at actual cost

### NO EXTRA FEE FOR CHARGES



We verify charge card addresses

ORDER TOLL FREE  
1-800-348-2778  
INDIANA 1-800-225-6838

Ad  
MSU

NOTE: Due to publishing lead times, product prices and specifications are subject to change without notice.

# Second-class mail arrives

This issue marks the first that is mailed via a second class permit. (Right, I said that last month. Well, we were premature with that announcement as complying with everything required by postal regulations wasn't possible in our time-frame.) We hope this issue got to you in a timely fashion. Second class isn't quite as fast as first class, but it's much faster than third class. It also stabilizes our postage costs on a monthly basis, which is something we couldn't do while mailing some 1,700 copies a month via first class mail. Ultimately, this will eliminate the weight of the magazine as a factor in calculating postage costs. With first class, the heavier the edition, the more expensive it is to mail.

We're down to 40 pages this month just so we could recover from November's 56-page edition. That one got to the printer late, Thanksgiving got in the way, and it got to the post office late. We regret it, but it happened.

## WE NEED SOME ADVICE

We'll be starting our fifth year of publication in February and we'd like some specific advice from you about what you want to see in MICROpendium in 1988. What are you interested in, in terms of columns? On the back page, along with the subscription form, we've included a space where you may list your four favorite (or least favorite) items that appear in MICROpendium. We'd like you to jot them down in order of importance to you. If there's something we don't have that you'd like to see us cover, make a note of that, too. Fill it out when you renew your subscription and we'll use the data to better meet your needs.

## GENEVE UPDATE

The final version of Multiplan and MDOS (Ver. 1.0) are finished. I've got both. Multiplan now loads everything except the help files into memory (you'll notice this most when you try to run a directory out of Multiplan), creates spreadsheets up to 41K in size and is very fast operating out of GPL speed No. 5. Version 1.0 of MDOS comes with Version .98 of the GPL interpreter. MDOS now supports autoexec files and batch commands. An addendum that comes with Version 1.0 lists only six modifications from the original MDOS documentation that was shipped with the

Geneve. All are minor. The docs note that the Geneve will format 80-track disk drives for those who have them.

Production has begun on the Myarc floppy/hard disk controller. Work is also being completed on a version of Myarc's disk manager program that will operate with the hard disk controller. It will have the letter "H" appended to its version number.

The Pascal run-time program apparently won't be ready until early 1988. That doesn't appear to be a big deal at this point since there aren't any programs written in Pascal specifically for the Geneve.

The final version of MY-Word is also ready. This includes several minor modifications over Version 1.0, which was released in September.

Expected for release in January is a commercial implementation of c for the Geneve.

## ANOTHER COMPANY TO WATCH OUT FOR

It's been a year since we've heard from New Day Computing, but we advise caution. The company is based in England and marketed cassette-based programs. We've had problems with the company for a long time.

We hear from some users that the former 99/4A National Assistance Group has been contacting them, so perhaps reported delays were because of reorganization. It is now called the International PC Group and is at 2269 South University Dr., Suite 118A, Fort Lauderdale FL 33324. A phone call to the group at (305) 962-9019 elicited information that they continue to offer 4A assistance.

## LABELER IS A LITTLE LATE FOR THIS YEAR, BUT...

This issue carries a program and article about a label printing program. It may be a little late to use this year for Christmas, but it may come in handy for anyone who needs a custom-designed label for any occasion.

Also, we failed last issue to give Cynthia Becker credit, but she's the person who sent us the photos from Seattle we published.

—JK

## Reviewed in MICROpendium

### 1984

**February:** B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500.  
**March:** Star Trek, Escape From Balthazar, Gargon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer.  
**April:** Monthly Budget\$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh.  
**May:** Companion Word Processor, Q\*Bert, Mad-Dog I & II, Programs for the TI Home Computer.  
**June:** Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II.  
**July:** Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position  
**August:** TE-1200, Tower, Galactic Battle, Galaxy  
**September:** Wycove Forth, 99/4 Auto Spell-Check, QUICKCOPYer, Wizard's Dominion, Anchor Automation Mk XII Modem  
**October:** Killer Caterpillar, ZORK I, Defender  
**November:** 9900 Disk Controller Card/Manager, Super Bugger, Transtar 120S printer, Floppy-Copy, Data Base-X  
**December:** Gravity Master, Data Base Manager System, Learning 99/4A Assembly Language Programming

### 1985

**January:** Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner

**February:** Super Extended BASIC, Beginning Assembly Language for the TI, ZORK II  
**March:** Morning Star Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor  
**April:** 9900 Micro Expansion System, Disk + Aid, Gemini 10X-15X  
**May:** Character Sets and Graphics Design, Draw 'N Plot  
**June:** GRAPHX, DATA BASE I  
**July:** Acorn 99, Advanced Diagnostics  
**August:** Model Dow-4 Gazelle, TI-Artist, PC-KEYS, Not-Polyoptics' Bankroll  
**September:** Midnight Mason, Myarc 32K/128K Card, GRAPHX Companion  
**October:** 4A/TALK, Extended BASIC II Plus, XB Detective, Console Writer 2.a  
**November:** Foundation Z80A/80-column cards, 9900BASIC, Adventure Editor  
**December:** Display Enhancement Package, Triple Tech

### 1986

**January:** BITMAC, Starcross  
**February:** Night Mission, Peripheral Diagnostic Module, BA-Writer  
**March:** Super Duper, Tunnels of Doom Editor, Business Graphs 99  
**April:** U.S. Open Tennis, PRBASE  
**May:** 4A Flyer, GRAM Kracker, Artist's Companion  
**June:** Myarc Disk Controller Card, Maxinem

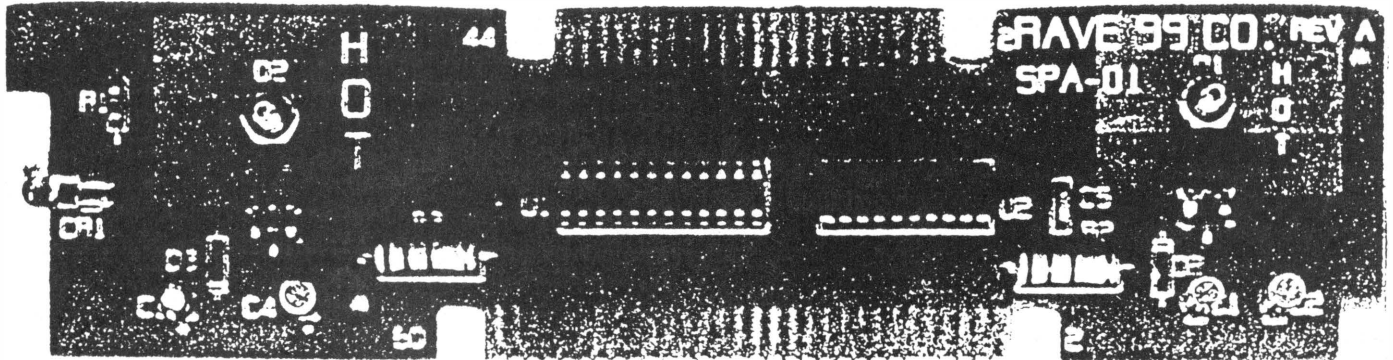
**July:** Horizon RAMdisk, Old Dark Caves, Funlwriter, TI99/4A Macro Assembler  
**August:** JOYPAINT 99, GPL Assembler, TI99/4A Intern, GPL Linker  
**September:** Mechatronic 128K Card  
**October:** TI-Forth Utilities, CorComp Memory Plus  
**November:** Submarine Commander, PEP, MAX-RLE  
**December:** GK Utility I and II and GRAM Packer, X-10 Powerhouse, RAVE 99/101.

### 1987

**January:** MG DISKASSEMBLER, Myarc XBII  
**February:** TI-Tax, Mechatronic Mouse  
**March:** Wycove Forth version 3.0, DUJIT Systems RGB Conversion Kit, Spad XIII Flight Simulator  
**April:** Geneve 9640, Disk Utilities  
**May:** QS-Solitaire, Geneve 9640 (Part 2), Technical Drive, Console Calc  
**June:** Character Sets and Graphic Design III, Writerease Ver. 1.1, 4A DOS, Prescan-It  
**July:** Junkman Junior, Avatex 1200/1200hc modem, Bubble Plane  
**August:** Prostick, The Brain, Rocketman, Menu Ver. 6.3  
**September:** TI-IBM Connection, Super Extended BASIC  
**October:** Fontwriter, Mechatronic 80-Column Card, Star NP-10 Printer  
**November:** Legends, Music Preprocessor, QS-Wheel, Spin-to-Win

**RAVE 99****INTRODUCES.....****NEW!****SPEECH SYNTHESIZER ADAPTER CARD**  
=====**NEW!**

Finally!, A low cost method to move your TI-Speech synthesizer from the side of the console to the Peripheral Expansion Box (PEB).



Takes only minutes to remove the housing from your speech synthesizer and install into the P.E. Box.

**LOOK !****SPECIAL FEATURES**

Compatible with the 99/4A and 9640 GENEVE computers.

Software Compatible with TI-Speech Synthesizer.

High Quality Construction

90 Day Warranty

LOW COST .. \$49.95 + \$2.50 for Shipping & Handling

Units are in stock and ready for immediate delivery.

**NEW!****NEW!****RAVE 99**

112 RAMBLING ROAD  
VERNON, CT 06066



(203) 871-7824

ADD 5% FOR HANDLING AND SHIPPING.  
CT. RESIDENTS ADD 7.5% SALES TAX.



VISA & Master Card Add 3% 

Make someone happy for the holidays..

Put a "Voice" back in your computer!!

**NOW****AVAILABLE**

# Feedback

## TI on People/Link

I noted with interest that the Source has put its TI SIG on probation, that is, either get additional usage or close it down. Even though I am not a member of that TI SIG, I feel the loss of any source of TI information exchanges is unfortunate. I am at present on three other national services, CompuServe, Delphi and American People/Link, which is the point of this letter.

I am the chairman of the Texas Instruments section of the Computer Club on People/Link. Not many Tiers are even aware of the existence of People/Link (AKA Plink). Plink is the forgotten member of the TI community. It is there just waiting to be discovered. The connect rates are the lowest of the national services. They go from \$3.95/hour (300 baud evenning hours and weekends from 8 a.m. to 8 p.m.) to \$4.95/hour (300 baud nights and all 1200 baud usage), except for higher prime time rates (weekdays 7 a.m. to 6 p.m.). And for "Frequent Plinkers" there is a 25 percent discount on connect time.

At the present time the download library has a number of programs available for downloading, but more uploads are wanted, especially for the Geneve. One benefit of a membership on Plink is that uploading is FREE. That's right, it doesn't cost a user one red cent to upload a program.

Plink does not (at this time at least) have a vendors section, but if any vendor would be interested, something could be done. Plinkers have access to all the normally expected electronic services, i.e., Email, messaging, conferencing, clubs, notice boards, etc.

Any and every source of TI information for dissemination by the TI/Geneve community is welcome. It is difficult to have "too much" information available for those of us who are true Tiers. It is these sources of TI/Geneve information that have made our machine what it is today.

And for those who cannot afford the more expensive services, here is one for them. The number to call via modem for more information or to sign up is (800) 826-8855, or in Illinois, (312) 822-9712. For those who prefer a human voice for getting this information, call (800) 524-0100, or in Illinois, (312) 870-5200.

The signup fee is a one-time \$15 charge.

For any readers who log onto Plink and have any questions, all they have to do is leave me an Email letter and I will get them an answer. Or they can leave a question on the notice board for public discussion. My Plink ID is WIS\*99ER. Hope to see some of the MICROpendium readers on People/Link soon.

**Thomas A. Wills**  
**Sheboygan, Wisconsin**

## Cursor too fast

I have been using TI-Artist, necessarily in limping fashion because of its incompatibility with the Seikosha/Axiom GP 550 TI printer, and I have encountered considerable trouble with the high cursor speed in zoom mood. In the midst of my efforts at control, I remembered Judy North's letter (Feedback, Nov. '86) where she corrected (Chris) Bobbitt's earlier statement ("Graphx vs. TI-Artist," Sept. '86) about the latters exorbitant cursor speed in zoom mode. Ms. North's experience was with version 2.0, but she said the cursor speed could be changed with "FCTN-, (comma)." Presumably she meant "function comma," although I suppose a number could be put in there instead of that dash.

I have TI-Artist version 2.01. In this version, function comma has no effect on the speed of the cursor in zoom mode, but it does change the color of the cursor and the pixels it writes to. ("FCTN-," has no effect different from "FCTN," with version 2.01.) No doubt this change is part of the alterations made in going from version 2.0 to 2.01. I can find no mention of "function comma" in the documentation to version 2.01.

Chris Faherty has done a superb job in the programming of TI-Artist (oh, that I could use my printer!), but that cursor speed IS excessive. I have every confidence that Mr. Faherty has not discontinued such a necessary part of the package; I am inclined to blame the fellow who wrote the manual, and who left out mention of this needed control.

Perhaps someone from Texaments or In-scebot will set us straight on this.

**Elton Schooling**  
**Sacramento, California**

## Module changes strain solder joints

Regarding the letter from Shirley Kulzick (November 1987), the symptoms described by her are sometimes caused by a faulty solder joint between the GROM connector and motherboard.

I experienced the same problems with my Extended BASIC module and cleaning the contacts of both the module and the GROM port connector did not improve the situation. After I re-soldered the GROM port connector at the motherboard, my problems disappeared. This was sort of a last-ditch effort, since — with all my other modules working perfectly — the solder connections were not really suspect.

Module changes put a strain on these solder joints. If one happens to be weak, it will eventually let go and cause intermittent contact.

**Lutz Winkler**  
**San Diego, California**

## DBM review lauded

Your review of database managers is the best review I have ever seen in your publication. Bill Gaskill must have spent a great deal of time on this project. I want to acknowledge that I am still working with the TI. I just set up a TI system with three drives to replace a Commodore with one drive. I used my favorite data base, PRBASE. The man runs a video store and needs to access this inventory fast. He could not believe the speed of the TI nor the speed of printing predefined reports.

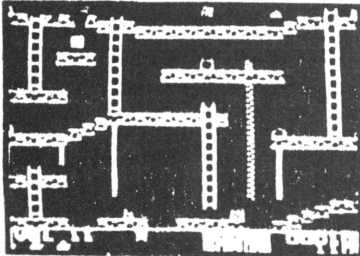
I set up the system so fast I forgot to set the drives as doubled sided. A call to Woody Wilson led me to option 7 of the create program. This is where you can change the drive to double sided. The first thing I did was initialize a disk for double sided. I used the great fairware PRBASE Utility program by John Johnson. I must warn you to define your label outline because option 7 will not let you out if you do not have labels defined. All you do is fill in the answers to the prompts. Woody suggests you use PIO.EC to prevent printer problems.

**James Sleeth**  
**El Cajon, California**



# TI-99/4A 'classic' game modules

**ALL THE NEW & EXCITING DataBioTics CARTRIDGES**  
FOR THE TI-99/4A COMPUTER  
**AT SUBSTANTIAL DISCOUNTS!**



Junkman Jr.

**NEVER BEFORE!!** New double excitement in cartridge from the thrill masters who wrote Parsec, Munchman, TI-Invasaders and Car Wars!!

### BARRAGE

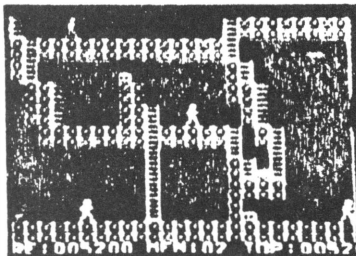
The fiendish Draks are raining terrible acid-balls on the planet. With skill, strategy, fun and action! you control awesome firepower. This laser cannon environment is controlled by one or two players. **\$16.95 + S & H**

### SPOT SHOT

No other game like it! You are a giant dragonfly. Your laser-like tongue and agility are more than a match for attacking insects but you must fly over and around hedges to stay alive. **\$16.95 + S & H**

### BLACK HOLE

Listen. If you liked Parsec, you'll love Black Hole! Dynamic special effects put you in control of two spacecraft against the Black Hole Empire. One or two players. (Joysticks required.) **\$16.95 + S & H**



Star Runner

### SPY'S DEMISE

Plug in nine screens of adventure and foreign intrigue with this new cartridge arcade adventure game.

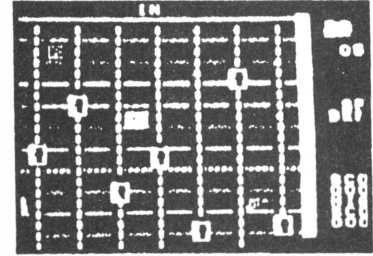
Requires console; joysticks optional. **\$16.95 + S & H**

(C)1983 C&I Design Group

### JUMPY

An arcade quality game that gets the jump on QBERT.™ Purple and black monsters join forces in a relentless chase to catch you. But they don't know that you can jump! Double jumps and real speed are fun parts of this ingenious game. **\$16.95 + S & H**

1983 SOF MACHINE, INC. QBERT is a trademark of EPYX, Inc.



Spy's Demise

### Four Star Classic JUNKMAN JR.

The year 2487 A.D. The place: Aging planet Earth in the dying city of Burrwin, Illinois. You are collecting pollution for transport to an outer space junkyard. But you must listen for vicious micro-dogs. Only your agility will save you!

Entertains with lively music, spirited action, imaginative graphics and sound. From DataBioTics (Joysticks recommended.) **\$16.95 + S & H**

### Science Fiction Thriller STAR RUNNER

You are a captive, aboard the starship Arcturus, laden with plundered treasure taken from your planet.

Your mission: recover the stolen booty stored on all 25 decks of the starship, one deck at a time. Your only weapons are blinding speed and your blaster.

Music, sound effects and colorful visual cues combine to make *Star Runner* the best entertainment value ever for your 99/4A. From DataBioTics. (Joysticks recommended.) **\$16.95 + S & H**

## EXCITING NEW WAYS TO USE YOUR TI-99/4A COMPUTER

### PRO TYPER

Ever wish you could type like a pro without the hassle of learning? This new cartridge from DataBioTics demonstrates that you can become a "touch typer" at home and have fun too!

Requires console; joysticks optional. **\$19.95 + s&h**

### TI WORKSHOP

At last a cartridge that helps you work with the TI-99/4A system. We call TI WORKSHOP a "program support environment." What it does for you is impressive. **\$47.95 + s&h**

Requires disk system and 32K memory expansion.



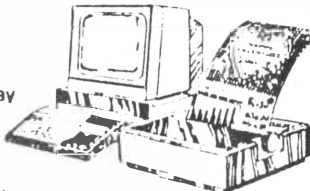
**REQUIRES ONLY YOUR CONSOLE!**

## DESKTOP PUBLISHING MIRACLE

FOR YOUR TI 99/4A

It's a breakthrough that needs only your console and a printer. The hottest new way to use your 99/4A! Now you can compose greeting cards, graphic letters, impressive school reports, striking invitations, even if you can't draw a line!

**\$17.95 + s&h**



Send order and make checks payable to:

**TEX-COMP**

P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD  
HOLDERS CALL DIRECT

**(818) 366-6631**

24 Hour Order Line

**TERMS:** All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

## BRAND NEW AND AT LOW PRICES!

### Not Just Another Memory Expansion THE SUPERSPACE II 32K MEMORY MODULE

Have you ever wished for a cartridge with all your favorite software? *SuperSpace II* gives you the power to create your own cartridge-based software. Load in your own assembly code, vacuum software out of other cartridges, or even save your favorite ROM cartridges to disk and run them at the touch of a single key! Design your own menu loader for up to 7 Assembly Language programs with this ingenious module, equipped with a battery to save your programs in memory for at least two years.

Included with the cartridge in this great package is a built in Editor/Assembler GROM and a free Editor, Macro Assembler disks, and the *SuperSpace II* manual, plus *Introduction to Assembly Language* and another bonus book. To get you started, a menu and cartridge loader are provided, along with E/A utilities, GROM header templates, a bitmap graphics demo and a free "C" compiler (Requires Disk System and Memory Expansion) **\$59.95 + S & H**

### THE SUPERSPACE 8K MEMORY MODULE

All the features of *SuperSpace II* but with 8K of memory. Does not include the books or "C" compiler. **\$34.95 + S & H**

### SUPER 4TH

Almost as fast as Assembly, but easier to learn. *Super 4th* supports speech and sound, multiple disk drives (including Hard Disk!). Comes with Decompiler and 109 page manual. Requires *Superspace I or II* and disk system. **\$17.95 + S & H**

## BASIC

# The DEFinition statement

By REGENA

TI BASIC has many built-in functions, both for numbers and for strings. However, if you need one that is not built-in, you may define your own with DEF near the beginning of the program. DEF can be thought of as DEFine or a DEFinition of a function. On other computer versions of BASIC, you may see DEF FN. One of the requirements is that the DEF statement be numbered lower than the statements later where it may be used, so I usually put DEF statements near the beginning of the program.

The DEF statement can save you time and memory if you use a function often in your programming or if a function involves a lot of typing and you want to use it in several places. Let's look at some examples of how it is used.

This first example is a simple formula. Let's say you have a homework assignment in which you need to find the areas of rectangles — lots of them — and you want to check your homework. Line 100 defines the function AREA to be LENGTH times WIDTH. Lines 120 and 130 ask for the length and width, and the user enters those numbers. Line 140 prints the area. Line 150 returns back to Line 110 to repeat the process. Press FCTN-4, CLEAR to end the program. This is just a simple example with no error checking, so I'll assume you'll use decent numbers in the INPUT.

```
100 DEF AREA=LENGTH*WIDTH
110 PRINT
120 INPUT "LENGTH: ":LENGTH
130 INPUT "WIDTH: ":WIDTH
140 PRINT "AREA: ":AREA
150 GOTO 110
160 END
```

Notice when you run the program that the two numbers you enter are multiplied and the result printed in Line 140. AREA is calculated according to the definition in Line 100.

Now let's say you have a project in a higher mathematic class where you want to tabulate values of SIN(X). This time the function to be defined depends on the parameter X, so it is used in parentheses. Line 100 defines a function F(X) to be SIN(X). Line 120 allows you to enter numbers for X, and Line 130 prints out the corresponding function F(X).

```
100 DEF F(X)=SIN(X)
110 PRINT
120 INPUT "X = ":X
130 PRINT "F(X) =":F(X)
140 GOTO 110
150 END
```

These two examples have been fairly simple to illustrate how DEF can be used. In fact, you would probably prefer not to use the extra DEF statement and just use the calculation you need in the PRINT statement. However, let's get a little more complex in the definition of the function. Perhaps after the second example program you have several functions to evaluate for different values of X. Instead of rewriting a whole program for each of your problems, you can simply change the DEF statement. For example, change Line 100 DEF F(X)=SIN(X) to the following:

```
100 DEF F(X)=SIN(X)+(SIN(X))*(SIN(X))/2+((SIN(X)^3)/3+((SIN(X)^4)/4
```

then run the program. Try different functions of X in Line 100. All you need to do is change line 100 for each different problem you want to use.

Now let's take a look at an example where DEF can save you typing in programming. Line 100 defines the function R(X) to be a random number using the formula  $\text{INT}(X*\text{RND}+1)$ . Now anywhere in the program that I use R( ) with a number in the parentheses, I will get a random number from 1 to that number. For example, Lines 130 and 140 use R(16), which would be a random number from 1 to 16. Lines 150 and 160 use several different random numbers. R(24) is a random number from 1 to 24, R(32) is a random number from 1 to 32, R(8) is a random number from 1 to 8, R(50) is a random number from 1 to 50, and R(100) is a random number from 1 to 100. Rather than use the long  $\text{INT}(X*\text{RND}+1)$  formula, I can use R(X). Try this program on your TI:

```
100 DEF R(X)=INT(X*RND+1)
110 FOR S=1 TO 16
120 RANDOMIZE
130 CALL SCREEN(R(16))
140 CALL COLOR(S,R(16),R(16))
150 CALL HCHAR(R(24),R(32),(S-1)*8+R(8),R(100))
160 CALL VCHAR(R(24),R(32),(S-1)*8+R(8),R(50))
170 NEXT S
180 GOTO 110
190 END
```

Here's an example to try in TI Extended BASIC — a rather short program using sprites (show this to anyone who claims to have easy-to-use sprites on a different kind of computer).

```
90 REM TI EXTENDED BASIC
100 DEF R(X)=INT(X*RND+1)
110 CALL CLEAR::RANDOMIZE
120 FOR N=1 TO 26::CALL SPRITE(#N,64+N,R(15)+1,92,124,
    R(255)-128,R(255)-128)::NEXT N
130 GOTO 120
140 END
```

Now, while you have TI Extended BASIC in, here's another sprite demonstration just for fun:

```
90 REM TI EXTENDED BASIC
100 CALL CLEAR
110 FOR N=1 TO 28
120 CALL SPRITE(#N,63+N,5,10,10,56-2*N,2*N)
130 NEXT N
140 FOR N=1 TO 28
150 CALL DELSPRITE(#N)
160 FOR D=1 TO 5::NEXT D
170 NEXT N
180 GOTO 110
```

Trying different velocities and/or starting points and using all the sprites can be fun. Try substituting the following line in the above program.

```
120 CALL SPRITE(#N,63+N,7,4*N+25,5*N+20,-2,2)
```

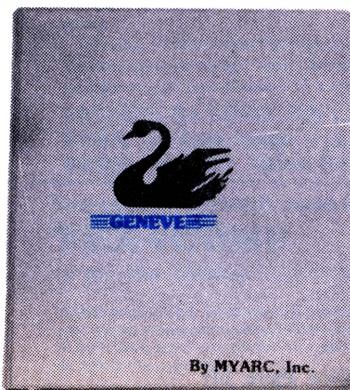
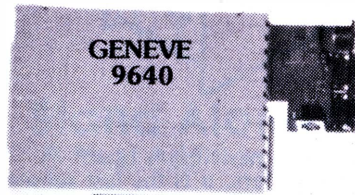
You might want to try writing a few sprite demonstrations using

(See Page 12)

# THE GENEVE 9640 HAS LANDED

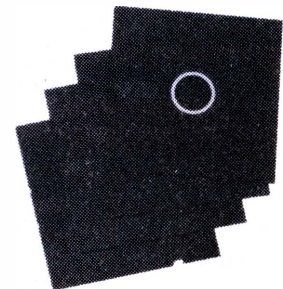
You will recognize it by its trade mark, a graceful gray swan swimming on blue water, an apt symbol. The ugly duckling TI no longer wanted, is no ugly duckling anymore. The GENEVE has surpassed everyones expectations, even our own; with power, speed, graphics, and adaptibility not found in other microcomputers. In fact, the GENEVE does so much, this ad can only begin to tell you about it.

- **Near 100% Compatible:**
  - If you have a program written in Basic, Extended Basic, XBII, Assembly Language, Forth, Pascal, you name it, if it runs on the 99/4A then it is near certain to run on the GENEVE.
- **32K No Wait State High Speed RAM:**
  - Programs like MultiPlan, which are painfully slow on the 99/4A, run many times faster, thanks in part to the High Speed RAM.
- **V9938 Video Processor with 7 Graphics Modes:**
  - Compatible with the 99/4A so you can use the GENEVE with the TV or monitor you are currently using. Same resolution as the Mac but with color. Faster than the Amiga, as fast as the Atari and does it with true aspect ratio, something the Amiga and IBM AT can not do. Aspect ratio renders higher resolution, better color, and appearance, through the use of square pixels. In the high resolution mode, 256 colors may be displayed on the screen at one time by the GENEVE, eight times as many as the Amiga can display in its high resolution mode.
- **Mouse Interface:**
  - The mouse interface is built in and ready to use with the MYARC mouse. But, we didn't stop there, it is also ready to support the newest hardware, like video digitizers, and that's just for starters.
- **6 Complete Pieces Of Software Are Included WithThe GENEVE. But, three you will not be able to see how you ever did without are:**
  - My-Word Processor; 80 columns, help screens for all modes of operation including control-U, initialize a disk without leaving the program, print formatted text to the screen for viewing before sending it to the printer and that's still not all My-Word will do.
  - Advanced Basic; the best and most powerful basic on the market today.
  - Pascal V4.21; if you have a standard USCD Pascal program, you will be able to run it with this program. If you do not have any Pascal programs, let me tell you, one of the largest library of programs available, is Pascal. Compilers for Fortran, Modula 2, Lisp, and Pilot, as well as business programs from A to Z, are all there. USCD Pascal Software developed for computers from Apple to IBM, will run on the GENEVE, without modification.



If you have heard enough, contact your MYARC dealer, they have one in stock for you. If you do not know who your stocking MYARC dealers are, or, if you want to know more about the GENEVE, telephone the number listed below, or mail your name and complete address with zip code to the address shown below. We will be happy to mail you a brochure covering the GENEVE in detail and a list of our stocking dealers. Supplies of the brochure are limited, so please hurry.

GENEVE  
P. O. Box 140  
Basking Ridge, New Jersey 07920-1014  
(201) 766-1700





## BASIC—

(Continued from Page 10)

as few lines as possible yet creating spirals, geometric designs, artistic patterns, or whatever. Then add the MAGNIFY command to get even more effects.

With this December column, I might just mention that it was exactly seven years ago that I got my first TI99/4 at Christmas. I was in that group of owners that paid about \$600 and got three command modules with the computer. (The first wave of owners, the TI pioneers, paid about \$1,000 and had to buy the monitor with the computer.) I still have that first TI of mine set up and have never had problems with it. My children still use it.

I started programming home computers and that next year wrote quite a few programs for the original *99'er Magazine*. My first article in *COMPUTE!* was published in December 1982, exactly five years ago, so that's another type of anniversary. I figure I've written more than 200 programs (mostly educational) for the TI — and

still have fun doing it. Just because the computer was orphaned doesn't mean the computer is no longer good.

I noticed that the November issue of *Family Computing* announced they were no longer publishing TI programs. Although most of the national magazines that cover a variety of computers no longer mention TI, the computer lives on. I liked the theme of the recent Chicago TI Faire, "The Computer That Would Not Die." We still have some great users groups, and there are lots of annual TI conventions (Boston, Chicago, Seattle, Los Angeles, etc.). With my family commitments I cannot travel to groups as often as previously, but I am looking forward to going to the TI-xpo 88/TI Fest-West at the Palace Stadium in Las Vegas, Nevada, Feb. 27-28. (Contact S.N.U.G, P.O. Box 26301, Las Vegas, NV 89126 for more information.) You can meet or re-meet great TI friends at the conventions, plus it would surprise you how many vendors are making new things for the TI.

## The trials of a c99 beginner

## Functions and strings

By CHARLES E. KIRKWOOD JR.

All strings or integers are input as characters. Type the characters and end by pressing <ENTER>. The characters must then be converted to a string or an integer. It is necessary to setup a buffer array in which to input each individual character.

The maximum length of a character string is 80 characters. However, the buffer array must have 80 locations plus one additional. When <ENTER> is pressed at the end of a character string or after 80 characters have been stored a NULL 0 (zero) is stored to indicate the end of the string. This NULL 0 is not the same as the digit 0. It is necessary to declare or define the buffer as having 81 elements, such as `char buff[81]`. The buffer name can be any variable name, not just `buff`.

Example 1 is a short program to input one line and print it out:

```
/*EXAMPLE 1*/
main()
{
    char a[81]; /*a string buffer*/
    int b,c;
    /*print a character string*/
    puts("Input a character string, ");
    puts("terminate with <ENTER>.\n");
    /*character string input*/
    b=gets(a);
    c=putchar(10);
    /*character string output*/
    puts(b);
}
```

The statement `b=gets(a)`; will input characters into an array `a` "sorta" like examples 4 and 5 in the c99 article in the October MICROpendium. When <ENTER> is pressed or 80 characters have been entered, a NULL 0 is stored in the next element. There are two differences, FCTN S can now be used to back up to correct errors and no flag is needed in the data, NULL 0 is automatic.

rect errors and no flag is needed in the data, NULL 0 is automatic. The characters in the buffer array `a` are concatenated and stored into variable `b`. The function `puts(b)`; will print the character string and this array can be used just like any other array. The output function `puts("...")`; will print any characters between the quotation marks. The control character `n` within quotation marks will start a new line.

Let us continue Example 1 to find the smallest letter, as in Example 4, c99 article, October MICROpendium. We need to know how many characters are in the string to get the last subscript of the buffer. So, change `int b,c`; to `int b,c,i,n,t`; and insert the program segment in Example 1A after `puts(b)`; and before `}`.

```
/*EXAMPLE 1A*/
/*string length*/
i=0;
while(a[i]!='\0')
    ++i;
/*last subscript*/
n=i-1;
```

The variable `i` counts the characters, `n` is the last subscript, and NULL 0 is '\0'. Now complete the program to find the smallest letter by adding Example 1B.

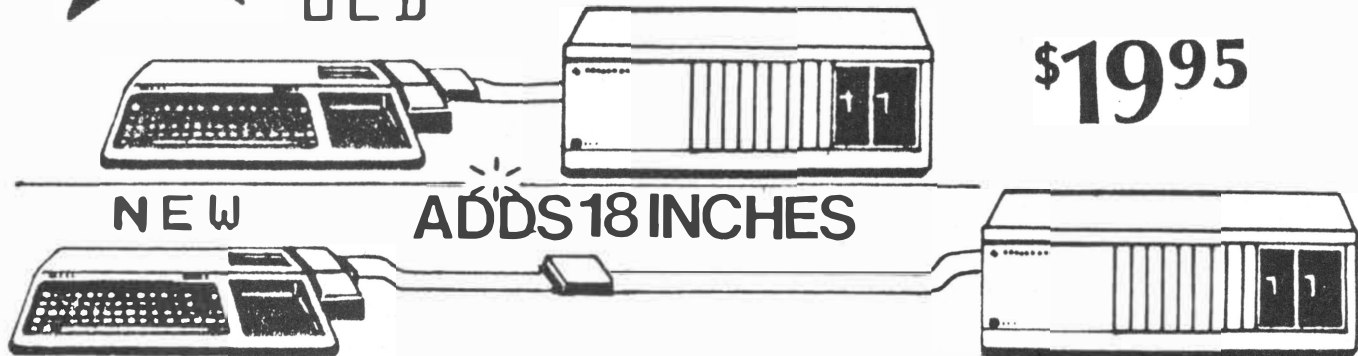
```
/*EXAMPLE 1B*/
/*smallest letter*/
t=a[0];
for(i=1; i<=n; ++i)
{
    if(a[i]<t)
        t=a[i];
}
/*result output*/
c=putchar(10);
t=putchar(t);
```

(See Page 14)



# NEW P-BOX EXTENSION

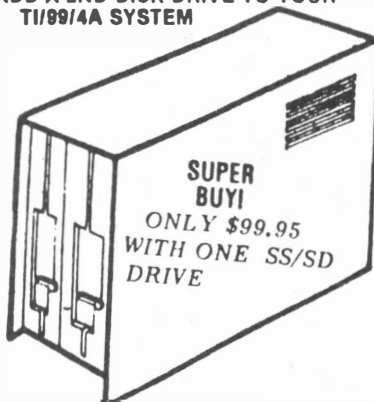
OLD SPACE-SAVER CONNECTOR CABLE



THIS NEW PRODUCT ANSWERS THE NEED MANY TI-99/4A USERS HAVE TO MOVE THE EXPANSION BOX FURTHER FROM THE CONSOLE THAN THE ORIGINAL CABLE PERMITS. IT ALSO MOVES THE HEAVY ORIGINAL TI CONNECTOR AWAY FROM THE CONSOLE WHICH IN TURN ALLOWS MORE FLEXIBILITY. UNLIKE SOME PAST ACCESSORIES OF THIS TYPE, ONLY THE HIGHEST QUALITY CONNECTORS AND TWISTED PAIR FLEX CABLE IS USED FOR RELIABLE PERFORMANCE AND LOW LOSS. THIS 18" EXTENSION CABLE ALSO LETS YOU MOVE YOUR COR COMP 9900 SYSTEM 18" AWAY FROM THE CONSOLE. GREAT FOR TIGHT QUARTERS OR TO GAIN MORE SPACE NEXT TO THE CONSOLE.....\$19.95 +s&h

## Now get more out of your TI Home Computer — for less.

ADD A 2ND DISK DRIVE TO YOUR TI-99/4A SYSTEM



## Stand Alone Disk Drive

A Must Addition For Your System!

TEX-COMP BREAKS THE PRICE BARRIER ON DISK DRIVES FOR THE TI-99/4A

We made a special purchase and as always we pass our savings right on to you. NEW LOWER PRICES on all drives and stand alone drive units...full height, half height, single and double sided and density. TI controller cards will work with single or double sided drives/single density. For double sided/double density you need the Cor-Comp controller card.

NEW LOWER PRICES!!!

Stand alone ss/sd drive (in case with power supply and cable). \$99.95

Stand alone ds/dd drive (in case with power supply and cable). \$119.95

Half height ds/dd drives (2 will fit in P-Box.....\$89.95.

Order 2 drives and receive P-Box installation kit with all cables,

bracket, screw and instructions (reg. \$29.95) for only .....\$9.95.

Stand alone drive case with heavy duty power supply for one full size or

two half height drives.....\$39.95.

Specify TI P-Box or Cor Comp 9900 system when ordering stand alone drives so we can provide correct cable and instructions!

SPECIAL original TI-99/4A ss/sd drives NEW only \$59.95..add \$20 for ds/dd.

These units are sold with a 90-day warranty.

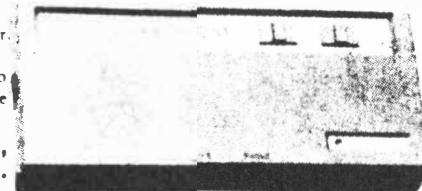
Cor Comp ds/dd controller card for P-Box-supports 4 drives....\$149.95

## VOLKSMODEM The Complete Low-Cost Plug-In Modem.

It puts computer-to-computer communications within easy reach of every personal computer owner.

Just plug Volksmodem between any wall phone jack and telephone and put your computer into instant communication with thousands of others. It's that easy. No extra parts or tools are necessary—just one adapter cable and software is all that's needed.

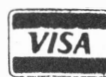
**MONEY SAVING SPECIAL.** Get the Volksmodem (reg. \$59.95), 99/4A modem cable (reg. \$12.95), and Terminal Emulator II (reg. \$9.95) an \$80+ value for ONLY \$39.95.



Send order and make checks payable to

**TEX+COMP**

PO BOX 33064 - GRANADA HILLS CA 91344



VISA and MASTERCARD  
HOLDERS CALL DIRECT  
**(818) 366-6631**  
24 Hour Order Line

**TERMS:** All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for Credit Card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders. Credit card. Company check or Money order for immediate shipment. Personal Checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

## c99—

(Continued from Page 12)

The c99 language is made up of functions to perform various operations. Some examples are input, **getchar()** and **gets()**, and output, **putchar()** and **puts()**. We can also write our own functions. Variables declared within the main block are known only in that block and those declared within a function are known only in the function. One of the methods of communications between **main()** and a function is by **arguments** and **parameters**. The general format for referencing a function is:

```
function name(arg1,arg2,...)
```

The arguments are separated by commas. If there are no arguments, the parentheses must follow the function name. Parameters will be within parentheses following the function heading. They must correspond one for one with an associated argument. Arguments and their associated parameters do not have to have the same name. When a single variable is used as an argument, the value in that location is passed to the parameter in the function. When an array is an argument, the location of the first element of the array is passed to the function. If you change the values stored in the parameter array in the function, you also change the values in the argument array in **main()**, since they are the same locations. However, if you change the value stored in a single parameter variable in a function, it will not affect the value stored in the argument in **main()**.

In the completed program (Examples 1+1A+1B+changes), replace the program segment **string length** statements by one statement:

```
i=strlen(b);
/*or i=strlen(a);*/
```

The name **strlen** is the name given to the function to find the string length. The argument is within the parentheses. The characters in the array **a** and the string **b** are in successive bytes, so they are alike in memory and either can be used as the argument. The difference in how they are used will depend upon how they are defined.

Since the string length segment has now been replaced by one statement, **i=strlen(b);**, it is necessary to include a **string length function** with the program. After the last **}** in **main()** in Examples 1+1A+1B+changes, write the following string length function, Example 1C.

```
/*EXAMPLE 1C*/
strlen(s) /*heading*/
char s[];
{
    int i;
    i=0;
    while(s[i]!='\0')
        ++i;
    return(i);
}
```

The statement **return(i);** in **strlen()** will return to **main()** and the value stored in **i** in the function will be stored into the variable **i** in **main()**. If no value is to be returned, only **return;** is used. There is no change in the rest of the program. A function can either be before or after **main()**.

Two additional equivalent functions are given to find the string

length.

```
/*EXAMPLE 2*/      /*EXAMPLE 3*/
strlen(s)          strlen(s)
char s[];          char *s;
{
    int i;          int i;
    i=0;            i=0;
    while(s[i])     while(*s++)
        ++i;        ++i;
    return(i);      return(i);
}                  }
```

The **\*** before a variable name defines that variable as a pointer. Example 3 uses a pointer and is the one most used in function libraries. A pointer points to a variable location. A detailed discussion of pointers can be found in any good C text. The pointer **\*s** initially points to the first character of the string **s**. The pointer will be incremented in **while(\*s++)** until NULL 0 is reached. The variable **i** counts the characters.

Pointers are declared either **char** or **int**. A character pointer steps by one byte, while an integer pointer steps by 2 bytes. The pointer in Example 3 must be declared **char** because each character in the string **b** occupies consecutive bytes.

Tom Wible has contributed a string function library **STRINGFNS**, written in c99, for use with c99 programs. Copy **STRINGFNS** and **CONIO** on your program disk. The file **CONIO** contains some necessary console I/O definitions.

Several function libraries, written in c99, are included with c99. A function library written in c99 can be included with your program by using the **#include** instruction. This instruction will place the file which follows **#include** with your program at that point. The instruction **#include DSK1.STRINGFNS** will place all functions in Wible's string function library with your program so that any one of the functions can be used. The file **CONIO** must be included before **STRINGFNS**.

Example 4 is the rewritten program to find the smallest letter using the string function library containing **strlen()**. Example 5 is the character sort program rewritten from the c99 article in October. The **sort** portion is written as a function called **chrst** and **strlen()** is in the string function library.

```
/*EXAMPLE 4*/      /*EXAMPLE 5*/
#include DSK1.CONIO #include DSK1.CONIO
#include DSK1.STRINGFNS #include DSK1.STRINGFNS
main()             main()
{
    char a[81];     char a[81];
    int b,c,i,t,n;  int b,c,n;
    /*input*/       /*input*/
    b=gets(a);      b=gets(a);
    c=putchar(10);  c=putchar(10);
    /*print input str*/ /*print input string*/
    puts(b);        gets(b);
    /*last subscript*/ /*last subscript*/
    n=strlen(b)-1;   n=strlen(b)-1;
    /*smallest letter*/ /*sort*/
    t=a[0];          chrst(n,b);
                                (See Page 16)
```

## EZ-KEYS

Introducing a new utility with a split personality. EZ-KEYS is the assembly program that helps programmers more easily write Extended BASIC programs, and is also a program that lets program users get much more out of any Extended BASIC program. How can it do both? EZ-KEYS is the one program that lets one key do the work of many keys - among other things.

### As a Programming Utility

- Write programs in any foreground and background color desired
- Write programs in a character set with a true lower case
- Highlight all numbers and symbols for easy debugging at a touch of a key
- Enter up to 23 screen lines for each program line
- Move the cursor up and down within a program line with a single key press
- Set EZ keys to automatically save your program to disk every 1 to 18 minutes as you write it
- Create macros for everything from deleting a range of lines, to moving and copying lines at a single key press

### As a Productivity Tool

- EZ Keys will sit behind any Extended BASIC program, even those with assembly
- Create customized versions for each application quickly and easily
- Put often-used information - any combination of up to 668 characters function and control keys, the arrow and ENTER keys - within a macro to automate mundane data entry tasks
- Call other macros from within a macro or even chain macros for truly large definitions and added versatility
- Increase the productivity of almost any business program by letting EZ-keys do the work

EZ-Keys allows you to program your keyboard. Now you can define any control and any function keys as any combination of letters, numbers, program code, function and control keys, the arrow and ENTER keys to perform complicated tasks at a touch of a key from within another program or while programming. An easy to use "macro editor" is always available for entering macros as long as 668 characters and as short as 1.

Because of its true macros, EZ-Keys is for both the programmer and the user of business programs. There is nothing else like it for the 99/4A, and little as versatile in the rest of the computer world. Because it is unprotected, custom versions are very simple to create for any application. EZ-Keys requires 32K, Extended BASIC, one disk drive and a TI-99/4A, or a Myarc Geneve and one disk drive. It concludes a substantial manual and tutorial.

**Suggested Retail**  
**\$14.95**

Available from all Asgard Software dealers and distributors or directly from Asgard Software (please add \$.75 shipping and handling). Write for information or send orders to:

**Asgard Software, P.O. Box 10306, Rockville, MD 20850**

(Continued from Page 14)

```

for(i=0,i<n;++i)      /*output*/
{                      c=putchar(10);
    if(a[i]<t)          puts(b);
        t=a[i];      }
}                      /*function chrsrt*/
/*output*/            chrsrt(n,a)
c=putchar(10);         int n;
t=putchar(t);          char a[];
}                      {
                        int i,j,k,t;
                        for(i=0;i<n;++i)
                        {
                            t=a[i];
                            k=i;
                            for(j=i;j<n;++j)
                            {
                                if(a[j]<t)
                                {
                                    t=a[j];
                                    k=j;
                                }
                            }
                            a[k]=a[i];
                            a[i]=t;
                        }
                        return;
                    }

```

There are two arguments for `chrsrt()` in Example 5, the first one, `n`, is the last subscript, and the second one, the character string `b`, can also be thought of as an array. Since an argument of `chrsrt()` is the character string `b`, the stored values will be swapped in the parameter array `a` in the function, and the output can be simplified

to `puts(b);`.

I stored the function `chrsrt()` in the string function library file, so that it will be unnecessary to type the statements in every time it is used. Additional functions can be added to any library as you need them.

No effort has been made in these c99 articles to give *the* method of solving a problem, but just *a* method or so. However, sometimes my curiosity gets the best of me and I like to try various methods, as in this article. My conclusions are based on actually running programs. The result of a function is an integer, even though it appears that either an integer or character variable will work in some of the examples. It is not always possible to explore every method. Ideally, I think, would be to have one of the several RAMdisks on the market today.

RAMdisk! We are an impatient generation and we want results immediately. We hate to wait, whether it is in line, in a car, or for the computer to write to or read from a disk. We forget the speed of some of the "small" computers of 25 years ago. Computers have certainly changed — smaller, more memory, cheaper, faster. The first computer at Clemson University in the early 1960s was a drum memory machine with paper tape and typewriter input and output. There was no disk drive or magnetic tape for storage. The computer was extremely slow compared to today's computers, but fast compared to what we had been using — the calculator. To compile a program, the object program was output to paper tape. Then the paper tape was read in to execute the program. I can remember one program in particular that we ran only during the Christmas holidays. We would start the program and then stop by daily to see if it had finished or had stopped for some reason "before its time."

Enough reminiscing about the "good ole days" and dreaming about the future. Let us wake up and be practical, with one disk drive we can compile and assemble some good programs.

Wish you all a *Very Merry Christmas* and a *Happy New Year!*

# Music maker on disk

## They said it couldn't be done, but he did it

By CHRIS SCHRAM

*The Texas Instruments representative told me it couldn't be done.*

*Dr. Guy Romano of the Amnion Helpline explained to me why it couldn't be done.*

*Even Craig Miller couldn't figure out how it could be done.*

Back in 1980 TI came out with the Music Maker cartridge (PHM 3020). For its time it was a pretty neat program. Being able to input musical notes through a graphic interface save the results to cassette (or even the prohibitively expensive) would surely turn us all into instant composers.

Okay, sure, I started out just copying

other people's music into memory, but just wait, this was a serious composition tool. Someday ... Schram's First Concerto for Violin, Bagpipe, and TI99/4A! How innocent we all were. As it turned out Music Maker had enough limitations to discourage real creativity, but it was still a lot of fun to play with.

The biggest limitation, however, didn't rear its ugly head until I finally sprang for that disk system in early 1983. I merrily proceeded to convert all my cassette-based software to the much faster loading diskette format, but when I got around to my music files, I found that I consistently encountered

the dreaded *ERROR DETECTED IN DATA* message before the tape had advanced a single millimeter. A call to Lubbock yielded a response delivered the kind of enthusiasm one would expect from a person who'd told the same story a thousand times a day: "It can't be done!" (I guess all the budding Mozart's purchased their disk systems at the same time.)

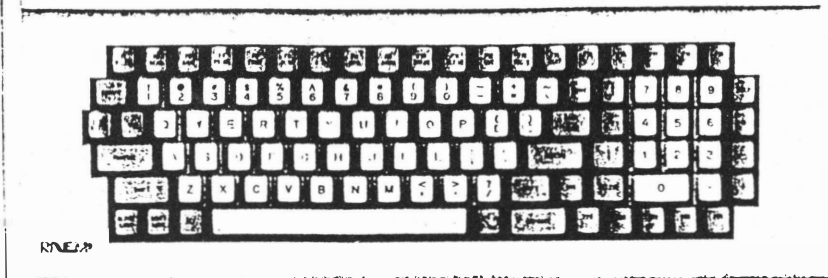
What the TI representative did *not* explain to me in great detail was that Music Maker was designed to utilize all the available VDP memory within its operating environment, which insures total

(See Page 18)



# MODEL 99/105 KEYBOARD ENHANCEMENT - \$199.95

**NEW!**



**INCLUDES custom keyboard.**

THE FOLLOWING ARE STANDARD FEATURES ON THE MODEL 99/105 KEYBOARD ENHANCEMENT...

- \* \* INTERFACE LOGIC CARD WHICH INSTALLS EASILY IN CONSOLE WITHOUT SOLDERING.
- \* \* 105 KEY KEYBOARD WITH 24 FUNCTION KEYS.
- \* \* SUPPORTS SINGLE KEY ENTRY OF ALL TI-WRITER, MULTIPLAN, AND EDITOR/ASSEMBLER COMMANDS.
- \* \* ATTRACTIVE LOW PROFILE KEYBOARD WITH ADJUSTABLE TILT ANGLE AND 5 FT. CORD.
- \* \* DEDICATED NUMERIC KEYPAD WITH NUMERIC OPERATORS.
- \* \* DEDICATED CURSOR CONTROL KEYS.
- \* \* ENLARGED RETURN, SHIFT, AND CONTROL KEYS.
- \* \* OPTIONAL USER INSTALLED RESET AND LOAD INTERRUPT CAPABILITY FROM KEYBOARD.
- \* \* DETAILED INSTALLATION AND OPERATING INSTRUCTION MANUAL INCLUDED.

## KEYBOARD INTERFACE CARD - \$149.95

- \* \* Interface card installs in 4A console in place of old keyboard and allows use of any IBM PC/XT compatible keyboard with your 99/4A. Interface card supports all 83 standard PC/XT key codes.
- \* \* Comes with complete, easy to follow installation and operating instructions. NO SOLDERING REQUIRED.
- \* \* Optional user installed RESET and LOAD INTERRUPT capability from keyboard. Complete instructions included.

**NEW!**



## KIT AVAILABLE

- \* \* Includes printed circuit board, complete instruction manual, and RAVE 99 custom chips. Hard to find hardware also included. Requires only assembly \$ 92.00 and about \$10.00 in easy to find-components to complete.

✦ IBM & PC/XT are trademarks of International Business Machines

some  
"RAVE"  
reviews!

..I wonder how I have managed all this time ..no longer have to go through those awful contortions...an absolute joy!! D.R. Harrisburg, PA.

.. the keyboard is everything you said and more...performs exactly as advertized...has operated flawlessly. J. C. Worthington, OH.

.. I would hate to go back to the original J. L. Hicksville, NY.

..having trouble restraining myself... nothing but superlatives.. I have stepped up to big time computing. J. W. Englewood, OH.

.. this keyboard is fantastic !! M.H. Colonge, West Germany

.. I played, I explored, I fell in love...by Gawd there is a Santa Clause. This thing is GREAT! .. absolutly no problem installing it. M.M. Tempe, AZ.

**SATISFACTION  
GUARANTEED!**



# RAVE 99



112 RAMBLING ROAD  
VERNON, CT 06066



**(203) 871-7824**

ADD 5% FOR HANDLING AND SHIPPING.  
CT. RESIDENTS ADD 7.5% SALES TAX.

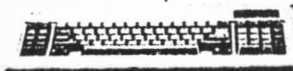
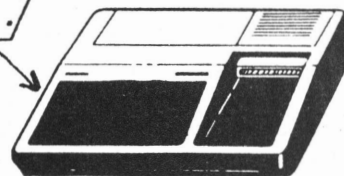


VISA & Master Card Add 3%



## EASY INSTALLATION

RAVE  
interface  
card



## MUSIC MAKER—

(Continued from Page 16)

incompatibility between cassette and diskette-based music files. Recall that at power-up the console does a peripheral search and, if it finds a disk drive controller, it allocates enough space in VDP RAM for three disk buffers.

I eventually learned that a cassette-based music file is 1024 bytes longer than the same file created in a disk environment. Dr. Romano suggested that I shorten my music files and then try to load them, but the sad truth is that all music files are the same size, regardless of content. (I hereby nominate Music Maker as TI's most poorly designed software product!)

When the TI spokesman said the tape files couldn't be converted to disk, he wasn't lying. That pesky data can't even be transferred between differently configured systems through the serial interface, as someone suggested I try. As a result, the old cassettes got filed away under my computer desk. I couldn't bear to toss out all that work. Years passed.

This story does have a happy ending. Thanks to the creative minds within the Texas Orphanage, I recently added a piece of hardware to my system, and I got the notion that the tool I needed back in '83 had just taken up residence in my expansion box, and the impossible has become possible.

What to do? Beg, borrow or buy a Horizon RAMdisk. It works just like a physical disk drive with two big exceptions: First, the expansion box can be turned on *after* the console and it will still work; and second, it only eats 11 bytes of VDP memory! (Even 11 bytes causes a little annoyance. More on that later.) What this means is that you have access to "disk storage" in the incongruous (and impossible) CALL FILES(0) environment.

### PROCEDURE

The following procedure has been tested on all my cassette-based music files. I have "over-killed" some aspects of it to make it as reliable as possible. Good luck.

Before proceeding to Step 1, be sure you thoroughly understand how to move around in the Music Maker environment. (When in doubt, read the manual.)

1. Initialize the Horizon RAMdisk and copy Disk Manager 1000 and CHARA1 onto it. Set the drive number of the RAM-

disk to 1, 2 or 3.

2. Key in the following Extended BASIC program and save it to RAMdisk. Until you are positive that it is 100 percent correct, it might be a good idea to TAIL REM (!) out the ":DELETE" statement in the next to last line.

```

1 ! SAVE DSK1.PATCH !163
100 DIM H$(8),A(6)!196
110 X$=RPT$(CHR$(0),28):: Y$="" !047
120 LINPUT "FILENAME: ":FN$ !131
130 OPEN #1:FN$,UPDATE,DISPL
AY, FIXED 128,RELATIVE !189
140 FOR RR=122 TO 115 STEP -
1 !207
150 LINPUT #1,REC RR:A$ :: P
RINT RR :: H$(RR-114)=A$ !24
7
160 IF POS(A$,X$,1)>0 THEN 1
80 !241
170 NEXT RR :: RR=115 !128
180 A(6)=ASC(SEG$(H$(8),116,
1))6+ASC(SEG$(H$(8),117,1)):
: A(1)=4096 :: A(0)=(A(6)-A(
1))/5 !054
190 FOR X=5 TO 2 STEP -1 ::
A(X)=A(1)+A(0)*(X-1):: Y$=Y$
&CHR$(INT(A(X)/256))&CHR$(A
(X)-INT(A(X)/256))AND 254)::
NEXT X !038
200 H$(8)=SEG$(H$(8),1,117)&
Y$&CHR$(16)&CHR$(0)&CHR$(0)&
CHR$(170)&CHR$(63)&CHR$(255)
&CHR$(17)&CHR$(1)&CHR$(0)!20
0
210 R1=RR-114 !008
220 H$(R1)=SEG$(H$(R1),29,10
0)!178
230 IF LEN(H$(R1))>1 AND SEG
$(H$(R1),1,1)=CHR$(0) THEN H$
(R1)=SEG$(H$(R1),2,100):: GO
TO 230 !107
240 LINPUT #1,REC RR-8:A$ ::
H$(R1)=SEG$(A$,1,100-LEN(H$
(R1)))&H$(R1)!041
250 FOR X=RR-114 TO 7 !026
260 H$(X)=H$(X)&H$(X+1)!196
270 H$(X+1)=SEG$(H$(X),129,1
28)!083
280 H$(X)=SEG$(H$(X),1,128)!
043
290 NEXT X !238
300 FOR X=122 TO RR STEP -1
!197

```

```

310 PRINT #1,REC X-8:H$(X-11
4)!072
320 NEXT X !238
330 OF$=SEG$(FN$,1,13)&"$"$
!203
340 OPEN #2:OF$,OUTPUT,DISPL
AY FIXED 128,SEQUENTIAL !013
350 FOR RR=0 TO 114 !249
360 LINPUT #1,REC RR:A$ :: P
RINT #2:A$ :: PRINT RR !226
370 NEXT RR !058
380 CLOSE #2 :: CLOSE #1 ::
DELETE !204
390 RUN !169

```

3. Turn everything off.

4. Dust off your old cassette recorder, find the cable and try to remember how it all hooks up. Plug in your Music Maker cartridge. Leave the expansion box connected to the console.

5. Power-up the console, leaving the expansion box off. Select Music Maker. Turn the expansion box on. (Your "real" disk drives are now invisible to the console, but the RAMdisk is available for use.)

6. Follow the Music Maker menus to LOAD a file from CSI. Press FCTN 6 (PROC'D).

7. Select Edit from the menu. Start at the first available measure after your music and "Copy All" from measure 1. (Write down the number of the measure you are now on.) Press FCTN 6 to advance to the next measure and Copy All from measure 2. Continue until you have copied measures 1 through 5. (The RAMdisk operating system will eat the pointers to measures 1 through 5. What you just copied will be copied back to the beginning in Step 14.)

8. Press FCTN 9 (BACK). Edit measure 1. Erase All. Pad all available space in all three voices with sixteenth notes. PROC'D to measure 2. Erase All and Copy All from measure 1. Continue until you have copied measure 1 into measures 2 through 5. (This is to insure that measures 1 through 5 are all the same big size. The patch program will run more reliably that way.)

9. Press BACK. Save the contents of memory to whatever drive you designated the RAMdisk as. (That was a whole lot faster than the Load, wasn't it?)

(See Page 20)

# SMALL BUSINESS SOFTWARE.

## TI-COUNT For the Texas Instruments Home Computer ... can help you do business a whole new way.

TI-COUNT is a complete professional accounting system for the TI-99/4A. Developed by Pike Creek Software, it is the only system to be recommended and endorsed for the 99/4A by TI. This system has all the features of systems costing up to thousands of dollars and many TEX-COMP customers are already running small to medium size businesses on this system. The TI-COUNT system comes in six separate packages and you only have to purchase those packages you need for your particular application. All packages can be used separately except accounts receivable and accounts payable which require the General Ledger package. Pike Creek completely supports this system and even sample forms are provided that you can have printed locally or purchase from Pike Creek. A background in accounting or bookkeeping is recommended to use this system. Requires 32K Memory Expansion, Disk Drive, Extended Basic, and a printer.

### GENERAL LEDGER

Pre-programmed for fast start-up in small businesses. Monitors up to 650 accounts. Operates 5 journals: purchases, sales, receipts, payments, general entries. Updates daily ... provides interim statements ... prints closing adjusted and unadjusted balances, summaries, statements and changes. Uses easy-to-follow familiar debit/credit double entry bookkeeping system.

### ACCOUNTS RECEIVABLE

Keeps up to 200 customer ledger accounts on 1 disk ... with ID data, cumulative payment, open invoices. Edits, verifies, prints invoices instantly lists receivables in customer accounts. Produces aging summary, billing statements weekly or monthly. Guides user through every task step-by-clear-step. (Requires General Ledger.)

### SPECIAL SAVINGS!

#### ACCOUNTS PAYABLE

Keeps up to 200 vendor ledger accounts on 1 disk ... with ID data, terms of sale, cumulative payment, open invoices. Scans bills for errors, immediately prints and files. User controls automatic check-writing and system: pay by age, code, invoice, or specified amount. Produces vendor file list, check register, copy of purchase journal entry. (Requires General Ledger.)

#### INVENTORY

Keeps you instantly abreast of sales, returns, purchases, state of stock. Stores up to 700 items in 4 departments on 1 disk ... with ID data, vendor, stock, on-order, back-order, re-order, cost, list and selling price, current value for each item. You select periodic or perpetual report basis. Prints labels, invoice forms, computes sales tax and freight. Operates independently or with General Ledger.

#### PAYROLL

Automatically provides payroll checks and stubs ... on your choice of weekly, biweekly, semimonthly, monthly basis, plus W-2 forms yearly. Computes 4 withholding taxes per employee ... 8 different deductions for each ... commissions, bonuses, tips, overtime. Keeps up to 100 employee files on 1 disk. Automatically locks for security after payroll is printed. Operates independently or with

#### MAIL SYSTEM

Change, move, and merge mail files. Add, correct or delete individual names and addresses, sort names and zip codes ... print mailing labels ... with automatic reports for each mail file and disk. System also edits and prints letters, labels, cards. Totals active and inactive names, specified search fields, last names, number of names in each state. Operates independently or with Accounts Payable and Receivable. Systems to mail to customers/vendors. NEWLY UPDATED FOR BOTH U.S. AND CANADIAN MAIL SYSTEMS.

**Special  
Purchase  
Drastic Reductions**



**THE ENTIRE TI-COUNT ACCOUNTING PACKAGE AT ONE LOW PRICE \$99.95**

THIS PRICE INCLUDES THE ENTIRE SIX PROGRAM SET  
ALONG WITH THE BONUS PROGRAM AUTO COUNT...

FREE SUPER BONUS WHEN YOU ORDER THE TI-COUNT PACKAGE AT \$99.95.

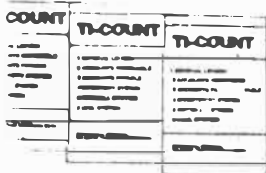
**AUTO-COUNT TAX LOG** Record the date, time, place, purpose, odometer reading and driver for each trip on diskette and then print out any selected data monthly or annually. Great for tax records! (a \$50.00 Value)

**ACCOUNTING PACKAGES NO LONGER AVAILABLE SEPARATELY!! MAIL SYSTEM ALONE \$19.95**

**Order today and save!**

**TEX+COMP**

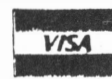
**YOUR TEXAS INSTRUMENTS SOURCE**



Send order and make checks payable to:  
**TEX+COMP**  
P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD  
HOLDERS CALL DIRECT  
**(818) 366-6631**  
24 Hour Order Line

**TERMS:** All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

## MUSIC MAKER—

(Continued from Page 18)

10. If you have more cassette files to load, press BACK, answer the scary question with "Y" and proceed from Step 6. (It's a good idea not to try to load much more than one side of a C-60 cassette onto a double-sided RAMdisk.)

11. Exit Music Maker (FCTN =). Get into TI BASIC. CALL DM to enter the disk manager and copy the contents of the RAMdisk to a floppy disk. (The files on the RAMdisk will soon be messed with. The backup is insurance.) At this point, the RAMdisk should look something like this:

HRZN-EPROM	Free	153	Used	583
Filename	Size	Type/No.	12	P
CANON_IN_D	63	DIS/FIX	128	U
CHARA1	9	PROGRAM		P
DEAR_KATE	63	DIS/FIX	128	U
DORIMIFISO	63	DIS/FIX	128	U
FUR_ELISE	63	DIS/FIX	128	U
GOOD_VIBES	63	DIS/FIX	128	U
MG	33	PROGRAM		P
MH	29	PROGRAM		P
PATCH	6	PROGRAM		P
SMBDYCMNPL	63	DIS/FIX	128	U
SOLACE	63	DIS/FIX	128	U
TICONOFUBA	63	DIS/FIX	128	U

If there are less than 59 sectors available, delete something temporarily. It's on the backup, right?

12. Plug in Extended BASIC and run the patch program. It copies and shifts the measure pointers from the last few records (to 122) of your music file to where they need to be in order to operate with a disk system (to 114). Some dummy pointers are placed where the pointers to measures 1

through 5 were overwritten. A new file with a modified name is generated and the old file is deleted. (Deleting the old file releases disk space so the next file may be processed.) Notice that the new file is four sectors shorter than before. This program loops, prompting for a new filename, until you press FCTN 4 (CLEAR). (A lot of trial and error went into writing this program and procedure. My pain, your gain.)

HRZN-EPROM	Free	185	Used	551
Filename	Size	Type/No.	12	P
CANON_IN\$\$	59	DIS/FIX	128	U
CHARA1	9	PROGRAM		P
DEAR_KAT\$\$	59	DIS/FIX	128	U
DORIMIFI\$\$	59	DIS/FIX	128	U
FUR_ELIS\$\$	59	DIS/FIX	128	U
GOOD_VIB\$\$	59	DIS/FIX	128	U
MG	33	PROGRAM		P
MH	29	PROGRAM		P
PATCH	6	PROGRAM		P
SMBDYCMN\$\$	59	DIS/FIX	128	U
SOLACE\$\$	59	DIS/FIX	128	U
TICONOFU\$\$	59	DIS/FIX	128	U

13. Get into the disk manager and rename the files to what they were before.

HRZN-EPROM	Free	185	Used	551
Filename	Size	Type/No.	12	P
CANON_IN_D	59	DIS/FIX	128	U
CHARA1	9	PROGRAM		P
DEAR_KATE	59	DIS/FIX	128	U
DORIMIFISO	59	DIS/FIX	128	U
FUR_ELISE	59	DIS/FIX	128	U
GOOD_VIBES	59	DIS/FIX	128	U
MG	33	PROGRAM		P
MH	29	PROGRAM		P
PATCH	6	PROGRAM		P
SMBDYCMNPL	59	DIS/FIX	128	U
SOLACE	59	DIS/FIX	128	U
TICONOFUBA	59	DIS/FIX	128	U

14. Plug in Music Maker and LOAD a file from RAMdisk. Edit measure 1. Erase All, then Copy All from the first measure you created in Step 7. Press PROC'D. Repeat until measures 1 through 5 are restored. At times you may see nothing to erase. Erase it anyway. (You are forcing the computer to recalculate the measure pointers. Each PROC'D may take several seconds.)

15. Press PROC'D to peek into measure 6. If you see something there, everything is probably okay; go to the next step. If not, repeat Step 14, but edit the first 5 measures in 2 passes. First, Erase All and place a single note in measures 1 through 5. Then go back and Erase All and Copy All from the measures you created in Step 7.

16. Press BACK. (It may take several seconds to get a menu.) Select Play and follow the prompts. If it plays, okay. Save the contents of memory back to RAMdisk. If not, you may be in for a little trial and error. If it's any consolation, I tried to make this procedure as foolproof as possible.

17. Load and Edit and Save the rest of you files.

18. Get into the disk manager. Back up the RAMdisk to floppy. Throw away those \*\$%\$#@! cassettes. You're home!

---

## Support our advertisers

---

# Labels with impact

## Label printer lets you express your thoughts

By ED MACHONIS

Take one sprightly grandmother, add a generous dash of Christmas Spirit, eight dashing grandchildren, several credit cards, and you'll find Grandpa reaching for the Christmas spirits whilst trying to wrap and label a small mountain of Christmas presents.

A couple of days later and hundreds of miles away, one finds those same dashing grandchildren trying to decipher Grandpa's spirited hieroglyphics while attempting to match presents with gift tags which have

become detached enroute.

Grandma also does her thing on Valentine's Day, St. Patrick's Day, Easter, Halloween, Thanksgiving and a seemingly endless succession of birthdays; whilst a bespirited Grandpa valiantly struggles to keep up.

Truly, a problem in search of a program. Picture Grandpa one Christmas morn reaching into his stocking for the expected usual source of solace and finding instead an ancient manuscript written in a strange language. Entering the mysterious symbols

into his trusty TI99/4A, Grandpa finds emerging from his printer a stream of decorative gift tags, suitable for every occasion and personalized for each grandchild.

This wondrous Extended Basic program, turns a nondescript ordinary 3½"x 15/16" mailing label into a gift tag much nicer than the "store boughten" kind, and one that will remain attached to its gift. A choice of eight different borders is offered. Colored ribbons (the printer kind) can be

(See Page 22)



# A STAR IS BORN

## Star's Latest Dot-Matrix Printing Sensation Fulfills Your Requirements to the Letter

**NX 1000  
MULTIFONT  
PRINTER**



WE THOUGHT THAT THE STAR NX-10 WAS THE GREATEST PRINTER VALUE EVER FOR THE TI-99/4A OR ANY COMPUTER FOR THAT MATTER. WELL STAR JUST PROVED US WRONG WITH THE ALL NEW NX-1000 THE SUCCESSOR TO THE NOW DISCONTINUED NX-10. COMES WITH A WIDE CHOICE OF PITCHES AND PRINT STYLES, GREAT TI-99/4A COMPATIBLE GRAPHICS, LETTER QUALITY AND HIGH SPEED DRAFT MODE. A PROFESSIONAL PRINTER AT A GREAT PRICE.....\$189.95 +s&h

- 144 CPS, 36 CPS NLQ
- Epson/IBM printer compatible
- 4K buffer
- Friction feed/tractor
- Front panel operation

**\$189<sup>95</sup> +S&H**

### A VERSATILE SELECTION OF FONTS AND TYPE STYLES

The NX-1000 gives you plenty of options for attractive and creative text printing with Courier, Sanserif, Orator-1 and Orator-2 type styles, in a choice of Pica, Elite, Condensed Pica and Condensed Elite sizes. In addition, Italic Printing is available in all print modes

### HIGH-RESOLUTION NLQ AND DRAFT PRINTING

Star's micro-precision engineering allows the NX 1000 to deliver excellent near letter-quality printing results at 36 cps, plus very presentable draft quality at 144 cps printing speed

### STRAIGHT FORWARD OPERATION WITH USER-FRIENDLY PANEL

The operator panel on the NX-1000 is extremely easy to use and enables soft-touch selection of specific printing requirements

### PAPER PARKING GIVES YOU THE BEST OF BOTH WORLDS

You don't have to remove the tractor feeder when you want to print onto a single sheet of paper

### WIDELY COMPATIBLE, HIGHLY CAPABLE AND VERY COMPETITIVE

Featuring Epson-based control codes in the Standard mode and IBM Proprinter II in the IBM mode.

**TEX+COMP** <sup>TM</sup> Proudly Introduces The

# THOMSON 4120



ONLY  
**\$249.95**  
Plus S&H

ANALOG RGB MODE  
FOR THE MYARC 9640

## 14" Data Grade RGBI/Video Composite Color Monitor.

THE 4120 by Thompson is the finest monitor that has ever been available for the TI-99/4A. In fact, it is compatible with every personal computer manufactured today and can be even be used as a super high resolution TV when connected to a TV tuner or VCR.

It features Composite, RGBI and RGB Analog inputs so that it will work with anything..The TI-99/4A, The Myarc 9640, The Turbo XT and all other IBM PC clones. Built in high quality audio amplifier and speaker. Resolution is 560H x 240V with a large 14" display area. Low 60Watt power input. Comes complete with a TI-99/4A cable, an IBM cable and a easy to follow diagram to make your own 9640 cable from Radio Shack parts.....A GREAT MONITOR.....

THIS GREAT PRICE FROM TEX-COMP MAKES IT EVEN BETTER..(add \$10.00 s&h)

Send order and make checks payable to:

**TEX+COMP**

P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD  
HOLDERS CALL DIRECT  
**(818) 366-6631**  
24 Hour Order Line

**TERMS:** All prices F.O.B. Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

# LABELER—

(Continued from Page 20)

used for added effect.

As one might expect of a Santa production, the program is unusually user friendly. All entries become defaults for the next label, saving retyping of greetings and gift giver's names.

You can print a single test label and then repeat with the quantity desired; or you can change borders and greetings so that each label is different. The illustrated sample tags will give you an idea of the program's versatility.

The print codes are for Epson compatible printers and should work with most dot matrix printers capable of supporting double density graphics. Line 170 contains the print codes for placing the printer in this mode. Changes may be required for other printers.

In any event, borders 6 and 7 (dollar sign and asterisk) can be used with all dot matrix printers as they are standard ASCII characters and graphics mode is not used. Line 180 should be changed to read:

```
180 H$=" " :: B=1
```

There are two blank spaces between the quotes. Other ASCII characters may be substituted for different borders, just change lines 250 through 290 and 320 following the example of lines 300 and 310. Change line 220 to display the correct border.

Although not tested as such, it is believed that the program will work with borders 6 and 7 on daisy wheel printers if

line 180 is changed as above and lines 340-350 are changed as follows:

```
340 RR$=RPT$(" ",12-(LEN(R$))/2+.5)&R$&RPT$(" ",13-(LEN(R$))/2)
350 N$=RR$
```

Change line 160 to have your printer print bold and delete any other print codes that confuse your printer. You can substitute any ASCII characters available on your daisy wheel for other borders as described above.

For dot matrix printers, border designs can also be changed by changing the graphic codes in lines 250 to 320. They are based on a 6x8 matrix expanded to 12x8 for double-density graphics.

When entering lines 220, 250, 260 and 320, type until you hear the beep, press Enter, then press REDO and finish typing the line.

One word of warning. The program contains hidden code; if you try to print more than 99 labels at one time, Grandma's credit cards will self-destruct!

```
10 ! ***** !025
20 ! * * !151
30 ! * PRINT A TAG * !033
40 ! * * !151
50 ! * by * !050
60 ! * * !151
70 ! * Ed Machonis * !050
80 ! * * !151
90 ! ***** !025
100 CALL CHAR(91,"2A542A542A
542A54")! CHECKERED BLOCK !2
06
```

```
110 CALL CHAR(125,"10387C7CF
E1038")! XMAS TREE !034
120 CALL CHAR(93,"00247E7E7E
3C18")! HEART !226
130 CALL CHAR(96,"1018141434
7060")! MUSIC NOTE !247
140 CALL CHAR(124,"107814101
82C64")! WALKER !037
150 CALL CHAR(123,"3C42A581A
599423C")! HAPPY FACE !178
160 OPEN #1:"PIO.CR" :: PRIN
T #1:CHR$(27);"E";CHR$(27);"
G" !177
170 K$=CHR$(27)&"L"&CHR$(12)
&CHR$(0)!139
180 H$=K$&RPT$(CHR$(56),2)&R
PT$(CHR$(124),2)&RPT$(CHR$(6
2),4)&RPT$(CHR$(124),2)&RPT$
(CHR$(56),2)&" " :: B=1 !234
190 DISPLAY AT(1,3)ERASE ALL
:"*** PRINT A TAG ***" !
188
200 DISPLAY AT(3,2):"GREETIN
G? (17 CHAR'S MAX)" :: DISPL
AY AT(4,2):D$ :: ACCEPT AT(4
,2)BEEP SIZE(-17):D$ !055
210 DD$=RPT$(" ",(17-LEN(D$)
)/2)&D$&RPT$(" ",(18-LEN(D$)
)/2)!169
220 DISPLAY AT(6,2):"CHOOSE
BORDER:" 1= [ [ [ [ [ [ [ [ " 5=
! ! ! ! ! " 2= ) ) ) ) ) " 6
= $ $ $ $ $ " 3= ] ] ] ] ] "
7= * * * * * " 4= \ \ \ \ \ "
8= ( ( ( ( ( " !177
230 DISPLAY AT(11,2):STR$(B)
:: ACCEPT AT(11,2)BEEP SIZE(
-1)VALIDATE("12345678"):B !0
76
240 ON B GOTO 250,260,270,28
0,290,300,310,320 !127
250 B$=K$&RPT$(CHR$(85),2)&R
PT$(CHR$(170),2)&RPT$(CHR$(8
5),2)&RPT$(CHR$(170),2)&RPT$
(CHR$(85),2)&RPT$(CHR$(170),
2)&" " :: GOTO 330 !CHECK'D
BLOCK !190
260 B$=K$&CHR$(4)&CHR$(12)&C
HR$(28)&CHR$(60)&CHR$(125)&C
HR$(255)&CHR$(125)&CHR$(60)&
CHR$(28)&CHR$(12)&CHR$(4)&CH
R$(0)&" " :: GOTO 330 ! XMAS
TREE !129
270 B$=H$ :: GOTO 330 ! HEAR
T !195
```

(See Page 24)

**HARDWARE MANUAL  
FOR THE  
TI 99 / 4A**

IT DESCRIBES:

- CONSOLE DESIGN
- CUSTOM CHIP OPERATION
- TMS 9900 H/W ORGANIZATION
- TMS 9900 INSTRUCTION SET
- INTERFACING PITFALLS
- CONSOLE SCHEMATICS
- PEB CARO DESCRIPTION
- GROM SIMULATOR DESIGN
- EXTENDED BASIC MODULE DESCRIPTION & SCHEMATICS

WEEKEND HARDWARE SEMINAR  
(INFORMATION AVAILABLE ON REQUEST)

Send \$19.95 Check or Money Order To:  
(CANADA & FOREIGN SEND \$23.00 U.S. FUNDS)  
(VOLUME RATES AVAILABLE - ON REQUEST)

THE BUNYARD GROUP  
PO BOX 53171, LUBBOCK, TX 79453

**DUNGEON FANTASY  
GAMES**

**WIZARD'S REVENGE  
WIZARD'S LAIR**

Best selling multilevel 3-D  
Fantasy Adventures  
available on Disk or Cassette.  
Programs require EX. Basic,  
Disk requires 32K Memory.  
Text adventures also available.  
Prices range \$8.95 to \$16.95

Write for FREE Catalog to:  
**RAINBOW SOFTWARE**  
15 ROSE STREET  
BROOKLYN, NY 11236

**CorComp — the Number One Supplier of Quality Hardware  
for the TI-99/4A**

**A COMPLETE EXPANSION SYSTEM  
9900 + FOR THE TI99/4A  
THE ULTIMATE  
99/4A EXPANSION SYSTEM  
AT A SPECIAL  
INTRODUCTORY PRICE  
FROM TEX+COMP™**



**COMPLETE  
EXPANSION SYSTEM  
NOTHING ELSE TO BUY!**

TEX-COMP, the undisputed leader in supplying the 99/4A User, has now put together the finest and most complete expansion system ever offered for the TI99/4A.

- **9900 Expansion Box & Regulated Power Supply (UL Approved)**
- **32K Memory Upgrade** Adds 32K bytes of Random Access Memory to your system.
- **Double Sided/Double Density Disk Controller** (operates up to 4 drives)
- **RS232 Interface** Lets you add a wide range of other accessories, such as printers or telephone modems, one parallel and 2 serial outputs.
- **1 SS/SD Disk Drive** Allows you to store and retrieve data on 5 1/4-inch single- or double-sided floppy diskettes.
- **1 Disk Drive Case & Regulated Power Supply**  
Handles two 1/2-height drives easily (UL or LAC Approved)
- **New Disk Manager with Improved Disk Utilities**
- **All Cables & Instructions** Including a free TI RS232 Y-Cable.

**ALL FOR  
\$379.95**  
Plus S&H

**For above system with full size or 1/2-height DS/DD Drive SPECIFY \$399.95**  
**For above system with a pair of 1/2-height DS/DD Drives NEW LOW PRICE \$499.95**

Other leading CorComp Hardware Values:

CorComp RS232 Card (for TI P-Box)	79.95
CorComp 32K Card (for TI P-Box)	99.95
CorComp 256K P-Box Card	169.95
CorComp 512K P-Box Card	229.95
CorComp DS/DD Controller (for TI P-Box)	149.95
CorComp 9900 System with Free RS232 Y-Cable	299.95
CorComp Stand Alone RS232 with Free Y-Cable	99.95
CorComp Stand Alone 32K	89.95
Triple Tech P-Box Card (Clock/Buffer)	119.95
9900 Clock Stand Alone	69.95
"Grom Buster" (for 1983 Consoles)	24.95
Load Interrupt Switch (with <b>FREE</b> Screen Dump Program)	19.95
PDI Diagnostic Module	24.95
<b>NEW "Writer-Ease" Word Processor &amp; Spell Check</b> New Lower Price	39.95
IBM Connection (39.95 with Controller Card)	49.95
1/2-Height DS/DD Disk Drive (2 will fit in P-Box) New Lower Price	89.95
Full Size SS/SD Disk Drive (exact replacement for TI 1250)	59.95
Full Size DS/DD Disk Drive	79.95
Drive Enclosure with Regulated Power Supply for 2 1/2-height or 1 full Drive	39.95
Cable Kit for 2 1/2-height Drives (for installation in P-Box)	29.95
Cable Kit for Stand-Alone Drives (specify TI or CorComp system)	29.95

Send order and make checks payable to:

**TEX+COMP**

P.O. Box 33064, Granada Hills, CA 91344



AUTHORIZED DEALER



VISA and MASTERCARD  
HOLDERS CALL DIRECT  
**(818) 366-6631**  
24 Hour Order Line

**TERMS:** All prices FOB, Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

**NOTE:** Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 6 1/2% sales tax.

## LABELER—

(Continued from Page 22)

```

280 B$=K$&RPT$(CHR$(6),2)&RPT$(CHR$(14),2)&RPT$(CHR$(252),2)&RPT$(CHR$(64),2)&RPT$(CHR$(56),2)&RPT$(CHR$(0),2)&"
  " :: GOTO 330 ! MUSIC NOTE !135
290 B$=K$&RPT$(CHR$(66),2)&RPT$(CHR$(70),2)&RPT$(CHR$(248),2)&RPT$(CHR$(76),2)&RPT$(CHR$(38),2)&RPT$(CHR$(0),2)&"
  " :: GOTO 330 ! WALKER !183
300 B$=CHR$(36)&" " :: GOTO 330 ! DOLLAR SIGN !008
310 B$=CHR$(42)&" " :: GOTO 330 ! ASTERISK !092
320 B$=K$&CHR$(60)&CHR$(66)&CHR$(137)&CHR$(165)&CHR$(133)&CHR$(133)&CHR$(133)&CHR$(133)&CHR$(165)&CHR$(137)&CHR$(66)&CHR$(60)&" " :: GOTO 330 ! HAPPY FACE !085
330 DISPLAY AT(13,2):"RECIPIENT? (12 CHAR'S MAX)" :: DISPLAY AT(14,2):R$ :: ACCEPT AT(14,2)BEEP SIZE(-12):R$ !046
340 RR$=RPT$(" ",(12-LEN(R$))/2)&R$&RPT$(" ",(13-LEN(R$))/2)!229
350 N$=CHR$(27)&"W1"&RR$&CHR$(27)&"W0" !101
360 DISPLAY AT(16,2):"FROM? (25 CHARACTERS MAX)" :: DISPLAY AT(17,2):G$ :: ACCEPT AT(17,2)BEEP SIZE(-25):G$ !001
370 GG$=RPT$(" ",(29-LEN(G$))/2)&G$&RPT$(" ",(30-LEN(G$))/2)!181
380 DISPLAY AT(19,2):"NUMBER OF LABELS TO PRINT?" :: DISPLAY AT(20,2):"1" :: ACCEPT AT(20,2)BEEP SIZE(-2):Q !230
390 DISPLAY AT(22,2)BEEP:"ALIGN LABEL:" PRESS ENTER TO PRINT:" PRESS "R" TO REDO " !133
400 FOR D=1 TO 50 :: NEXT D !196
410 CALL KEY(0,K,S):: IF K=13 OR K=82 THEN 420 ELSE 410 !242
420 IF K=82 THEN 190 !248
430 FOR I=1 TO Q !143
440 PRINT #1:RPT$(B$,4);DD$;RPT$(B$,4);CHR$(13);CHR$(10)!107
450 PRINT #1:B$;"To:";N$;" ";B$;CHR$(13);CHR$(10)!076
460 PRINT #1:B$;" WITH ";H$;"LOVE ";H$;" FROM ";B$;CHR$(13);CHR$(10)!064
470 PRINT #1:B$;GG$;B$;CHR$(13);CHR$(10)!117
480 PRINT #1:RPT$(B$,10);RPT$(B$,7);CHR$(13);CHR$(10)!060
490 PRINT #1:CHR$(13);CHR$(10):: NEXT I :: GOTO 190 !203

```

## Video board for Geneve promises sophisticated editing capability

Videoflex and "frame grabber" cards for use with the Geneve 9640 are under development by Millers Communications of Seattle, Washington.

Dave Miller of the company says it hopes to begin manufacture of the cards in early 1988.

The videoflex card is a device which allows the user to superimpose or overlay graphics or text over a signal from a VCR or television (an NTSC video composite).

The frame grabber or frame storer samples a signal at 30 times per second. Any time the user wants to "grab an image" off the TV or VCR he can push a button, Miller explains, and it digitizes it in a form the Geneve can read. This can be brought back to the VCR and used.

"You could digitize an image of Johnny Carson, change the color of his eyes and put it with other graphics," he says. "You can simulate the crash of a 747 in Boston."

He anticipates the cost of the videoflex card to be between \$700 and \$1,000 and the frame grabber to be between \$900 and \$1,500. He notes that similar products for other computer systems cost approximately \$25,000.

He says the cards are "not for your average full configuration system user, they're for somebody seriously interested in video or in graphics. It allows for the final editing of the product."

As a video production professional who "couldn't afford the \$25,000 price," he decided to build the cards, he says.

He notes that the videoflex card provides a high-resolution RGB analog to composite conversion. This means that the user can use the high resolution RGB the Geneve offers on a composite screen.

For a handout with more detailed information and engineering specifications, write Millers Communications, 8815 18th Avenue, S.W., Seattle, WA 98106.

## IP changes business focus

Innovative Programming, Box 2737, Rohnert Park, CA 94928, is moving away from the TI market and focusing on localized desk-top publishing, according to Galen Read of the company.

Read says the company will fulfill outstanding TI orders and accept new ones. He says the company's 800 number will probably be disconnected in January.

The company no longer carries DataBiotics products or serves as their technical hotline, Read says. He notes that Innovative Programming is also no longer maintaining a bulletin board.

"We will maintain contacts with CorComp and Myarc and put out a catalog once a year if there is sufficient interest," Read said.

# TEX<sup>+</sup>COMP<sup>TM</sup>

America's Number One TI computer retailer

## puts the big names in software on line.

Action • Adventure

Excitement

Shoot 'em ups

Fun • Intrigue

Dare

Maneuver

Race

Escape

Spring

Float

Destroy

Education

Thrills • Chills

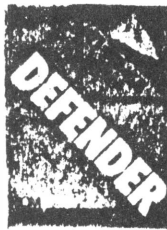
Knock 'em down •

• Entertainment

• Danger

• Trap

• Jump



DEFENDER



POLE POSITION



MOON PATROL

PICNIC  
PARANOIA

CENTIPEDE



PROTECTOR II



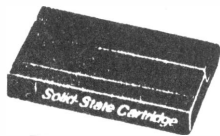
JUNGLE HUNT



PACMAN



DONKEY KONG



## the big names in software

ATARI PUT SOME OF THE GREATEST ARCADE GAMES OF ALL TIME ON MODULES FOR THE TI-99/4A..NAMES LIKE POLE POSITION, PAC MAN, CENTIPEDE ...THE SUPPLY OF THESE GREAT GAMES IS RUNNING LOW SO NOW IS THE TIME TO BUY AT GREAT LOW PRICES..

It's the best software at the best prices **\$9<sup>95</sup>** each +\$4h  
**BUY 2—GET 1 FREE! \$19<sup>95</sup>\***

\*BUY ANY TWO OF THE ABOVE TITLES AND GET YOUR CHOICE OF PAC MAN OR CENTIPEDE FREE..ALL TITLES MUST BE DIFFERENT NO DUPLICATES PLEASE ON THIS SPECIAL OFFER...



MUNCH MOBILE

More double dexterity, *Munch Mobile* is not for Sunday drivers. This car has arms which you use to grab at goodies along the highway. If you can. But watch the fuel, or your trip will turn into—gulp!—a few surprises (Joysticks recommended.)

**\$11.95**

TEXAS INSTRUMENTS  
**T.I. TANGO**  
 BUY THIS, GET THIS  
**FREE!** \$19.95 VALUE  
 LIMITED TIME OFFER

BOTH PROGRAMS ONLY \$11.95



JAWBREAKER II

A 1-player arcade game of sudden danger and narrow escapes. You control the jawbreaker, a powerful set of crunchers. Race through 5 shifting mazes before your power runs out—raising your score by devouring Dots and Special Treats, evading Grinning Gobblers and munching Energizers (Joysticks recommended.)



AUTHORIZED DEALER



VISA and MASTERCARD  
 HOLDERS CALL DIRECT  
**(818) 366-6631**  
 24 Hour Order Line

Send order and make checks payable to:  
**TEX<sup>+</sup>COMP**  
 P.O. Box 33064, Granada Hills, CA 91344

TERMS: All prices FOB Los Angeles. For fastest service use cashiers check or money order. Add 3% shipping and handling (\$3.00 Minimum). East of Mississippi 4 1/2%. Add 3% for credit card orders. Prices and availability subject to change without notice. We reserve the right to limit quantities.

NOTE: Payment in full must accompany all orders—credit card, company check or money order for immediate shipment. Personal checks require up to 4 weeks to clear. California orders add 8 1/2% sales tax.



## Forth tips

# Converting Forth screens to D/V80

By LUTZ WINKLER

Some time ago, there was a program floating about to convert Forth screens to DIS/VAR 80 files. If memory serves me correctly, it was 13 (!) screens long and required a lot of typing by the user including that ugly F-D" word.

Now, in the September issue of the LA "TopIcs" newsletter (with credit to the TINBS newsletter) I spotted a three-screener to do the same thing. Though 16-line screens are shown, the article states that the code is Wycove and I/O specific words would have to be replaced to make it work in TI-Forth. If you don't know what Wycove's I/O words mean (or do), this is a bit hard to do.

Here, for all the writers who wish to include Forth screens in text files but have no desire to enter them manually, is a two-screener that not only transfers screens to D/V80 files, but also does it in reverse. And it works in standard TI-Forth:

```

0 ( SCREENS>FILE ) BASE->R .DECIMAL 0 CLOAD F>S 68 CLOAD STAT
1 HEX 0 VARIABLE BUF 4E ALLOT
2 PABS 2+ BUF 1400 FILE XF XF
3 I FNAME ( -- cnt ) CR ." Filename: " PAD 40 20 FILL
4   PAD 1+ 30 OVER OVER EXPECT -TRAILING 2- -DUP ;
5 I SETFILE ( n-- ) IF XF SET-PAB VRBL 50 REC-LEN DUP
6   ROT 1- C! 1+ PAD PAB-ADDR 9 + ROT VMBW
7   ELSE DROP APPND THEN ;
8 I S>F FNAME SETFILE OPN
9   CR ." Start from screen: " QUERY INTERPRET
10  CR ." End with screen: " QUERY INTERPRET 1+ SWAP
11  DO I BLOCK 400 OVER + SWAP
12  DO I BUF 20 MOVE BUF 40 -TRAILING 1 MAX WRT DROP
13  40 +LOOP LOOP CLSE
14  CR CR ." S>F, F>S or FORGET BUF" CR ;
15  R->BASE -->

0 ( FILE>SCREENS )
1 BASE->R HEX
2 I EOF STAT 1 AND 0= ;
3 I F>S FNAME SETFILE OPN
4   CR ." Destination screen: " QUERY INTERPRET
5   CR ." How many screens?: " QUERY INTERPRET
6   OVER + SWAP
7   DO EOF IF I BLOCK UPDATE 400 OVER OVER 20 FILL OVER + SWAP
8   DO EOF IF RD BUF I ROT CMOVE ELSE LEAVE THEN
9   40 +LOOP
10  THEN
11  LOOP CLSE FLUSH
12  CR CR ." F>S, S>F or FORGET BUF" CR ;
13  R->BASE
14  CLS CR ." Enter S>F for screens to DV80 file,"
15  CR ." or F>S for DV80 file to screens." CR CR ;S
16

```

## User groups

*These are updates and additions to our listing of user groups worldwide, begun in our May 1987 issue.*

### California

**San Fernando Valley 99ers**, 2823 Sanborn Ave., La Crescenta, CA 91214 (new address). Contact: Jim Edwards, president (818) 248-9558. Meets at 7:30 p.m. the second Wednesday of each month in the Doctor's Conference Room, Sherman Oaks Community Hospital.

### Texas

**Pastors' User Group**, Drawer O, Hempstead, TX 77445 (new address). No fee, but gifts or contributions no longer turned away. International group, about 60 percent of whom are clergy.

## Outside U.S.

### Australia

**TiSHUG (Texas Instruments, Sydney Home User Group)**, P.O. Box 214, Redfern, New South Wales 2016. Contact: Terry Phillips, honorary secretary. Founded May 1981, approximately 300 members. Meets first Saturday of each month, with meetings generally on a set theme. At least two full-day meetings each year, generally tutorial programming workshops or technical workshops. Also, regional home groups meet in members' homes. TiSHUG New Digest published 11 times a year; BBS with member-written software; publications library with hundreds of newsletters and books; software library with more than 1,800 programs, shop with hardware, software and consumables available to members. Group has recently built 123 RAM cards and has been involved in installing 32K memory expansion into members' consoles. Overseas memberships available at \$30 U.S., ensures air mail delivery of TiSHUG News Digest.

### Canada

**Channel 99 Users Group**, 77 Lavina Crescent, Hamilton, Ontario L9C 5S8. Contact: Tom Arnold, president (416) 385-5576.

The original version of this routine comes from Michal Jaegermann of the Edmonton, Alberta, users group and is only one screen long. However, it works only with the enhancements he has incorporated in his file I/O load option. I adapted it to work with the normal -FILE load option and added some on-screen prompts which increased its size to two screens. Even though this is a step backwards — at least from Michal's version — it's still a considerable improvement over the 13-screener and a useful one if you don't happen to have Wycove. With the prompts it is self-explanatory and requires only one comment: If you have written a number of (consecutive) screens to a file and wish to add more to the same file, press ENTER instead of entering a new file name. For example, you have established a file named DSK2.SCREENS and transferred screens 32 through 45 to it. If you opt for S>F again and press ENTER at the "Filename:" prompt, the next entries, say from starting screen 60 to ending screen 66, are appended to the earlier transfer. Your "SCREENS" file will contain screens 39-45 and 60-66.

Please note that only the contents of each screen are written to the file. For use in an article, such as this one, you will have to insert some blank lines to separate the screens. For eye appeal you may also want to add line numbers as I have done here.

## National E-Mail registry

A national E-Mail registry, The White Pages, is available to modem users. It lists thousands of subscribers, both individuals and companies. The directory operates through an automated search system. When the user makes a search for someone, he receives information on which commercial or public telecommunication system he can be found by E-Mail. Registration is free. Each search is the cost of the call to the service and 20 cents per search (no charge if not found). To register, set your terminal for 7 bits, even parity, 1 stop bit, 300, 1200 or 2400 baud and call 1-800-622-0505.

# Geneve Differences in systems described

By MIKE DODD

In the October issue of MICROpendium, Mack McCormick wrote a review of the Mechatronics 80-column card. Mack has always been a real asset to the 99/4A community, and it sure is nice to see him back writing again.

There are a few points that I would like to make about the review. The Geneve operating system mentioned was a very early version (essentially a command-line Editor/Assembler) that is no longer in use. Unfortunately, I don't believe that the current M-DOS will work with the Mechatronics 80-column card.

The Mechatronics card is centered around the MSX-9938 VDP chip, the same video chip used in the Geneve. The Geneve also has the equivalent of a Rave keyboard and a GRAM Kracker.

The Geneve, however, also includes many other features that the TI setup cannot. Here's a list of the features of both setups:

## 4A, GRAM, 80-col,

### Rave keyboard

GRAM emulation  
IBM keyboard  
MSX-9938 VDP chip  
32K CPU RAM (not  
bank-switchable)  
CRU keyscan

## Geneve

GRAM emulation  
IBM keyboard  
MSX-9938 VDP chip  
512K CPU RAM  
(bank switchable)  
IBM key-code keyscan  
9640 mode, where  
memory mapped I/O is  
clustered around  
>F000 Clock chip  
RAM at >0000 mouse  
support M-DOS XOP  
calls, allowing use of  
many system calls  
from assembly  
programs.

(XOPs are routines allowing a program to access certain subroutines in another program — in this case, M-DOS).

Probably most Geneve programs will take advantage of the advanced memory bank-switching available, and I would think that many will use 9640 mode and

(See Page 28)

## RECIPE WRITER 2.0

The database program designed exclusively for recipes! This powerful program is perfect if you need to organize your recipe collection, if you want to plan a meal, or if you simply want to find a nice side dish that goes with chicken. This completely new upgrade to the popular original features:

- Large available room for recipes: space for a full title, the oven temperature, 23 lines of ingredients, and 23 lines of preparation instructions.
- A line for multiple keywords to describe the recipe Wildcard keyword search routine that lets you find all recipes with any given keyword even if it was misspelled. Enter *Chick\*n* and it will find all recipes with a keyword *chicken* even if you spelled it *chickun*.
- Complete recipe editing utilities.
- Complete print utilities - print to paper or 3 x 5 cards.
- A flawless conversion utility that will convert the ingredient list by any factor - for instance, make a recipe for 2 into one that serves 7.
- The ability to build an index of recipes and compact it for super fast searches - none more than seconds per disk with standard TI equipment.
- Friendly, fast menus with options in English. All options fully described in an extensive user manual.
- Written in c99 (by Clint Pulley) and compiled to assembly so it's very fast - yet it loads like an Extended BASIC or assembly program.
- It is unprotected and so can be used with RAM disks, etc.
- 100% compatible with the Myarc Geneve 9640.

### Minimum requirements:

TI-99/4A, 32K, TI Extended BASIC or  
Editor/Assembler, one disk drive. Printer optional.

## \$19.95 includes shipping & handling

Also now available!

Electronic Gourmet (tm) series of companion disks for Recipe Writer II. Each volume in this series is a complete book of recipes set up so you can find what you want at a keypress.

### NOW AVAILABLE

Volume #1 - Southwestern Foods - a tribute to the 99/4A's birthplace  
Volume #2 - Appetizers & Soups - a collection of great meal starters

**ALL VOLUMES \$6.95 EACH INCLUDING SHIPPING & HANDLING**

**ASGARD SOFTWARE P.O. BOX 10306 ROCKVILLE,  
MD 20850 (301) 559-2429**

## GENEVE—

(Continued from Page 27)

M-DOS XOP calls. While mouse, clock, and 512K RAM support are available for the 99/4A, they are accessed in a radically different way than the Geneve. Therefore, the programs written to use those peripherals will not be interchangeable between the 99/4A and 9640.

One of the new features of the Geneve is time and date stamping of your files. This information is available from Extended BASIC with an extension of a catalog disk program (commonly printed in manuals to disk controllers). Look for the INPUT statement that reads the file name, size, and file type. After the last variable, add a list of 12 variables.

The first six are the time and date of creation, and the last six are the time and date of the last update. The numbers are, in order, second, minute, hour, date, month, year. One other difference in the catalog is that, where before the record length (e.g. 80 for a Dis/Var 80 file) would be returned as 0 for Program files, it now contains the total length of the program in bytes. Here is a modified catalog program that uses these new features: (The listing uses Tom Freeman's checksum program, listed in the October 1987 MICROpendium.)

```
100 DIM E(11)!104
110 CALL CLEAR !209
120 INPUT "Drive number? ":A
!095
```

```
130 B$="DSK"&STR$(A)!017
```

## New phone number for Houston BBS

The Houston Users Group's BBS has a new telephone number.

Bill Knecht, the former sysop, had to resign as sysop because of ill health.

New phone number for the board is (713) 781-4844. Sysop for the board is Henry Schlereth.

Back issues available at \$2 each. No shipping charge in U.S., Canada or Mexico. Other countries 50¢ per issue surface mail, \$2 per issue airmail.

Volume 1, issues 1 and 2 out of stock.

P.O. Box 1343, Round Rock TX 78680

```
140 OPEN #1:B$&"",INPUT,RELATIVE,INTERNAL !243
```

```
150 INPUT #1:A$,A,A,B !128
```

```
160 PRINT B$&" "&A$: "Free  
=";B;"used = ";A-B: " Filenam  
e Size Type P-----  
-- -- -- -- --" !165
```

```
170 FOR A=1 TO 127 !155
```

```
180 INPUT #1:A$,B,C,D,E(0),E  
(1),E(2),E(3),E(4),E(5),E(6)  
,E(7),E(8),E(9),E(10),E(11)!  
127
```

```
190 IF LEN(A$)=0 THEN 380 !2  
16
```

```
200 PRINT A$;TAB(12);C;TAB(1  
7);SEG$("D/ED/VI/FI/VPrg",3*  
ABS(B)-2,3); !163
```

```
210 PRINT SEG$(" ",1,6-LE  
N(STR$(D)));D; !232
```

```
220 IF B>0 THEN 240 !232
```

```
230 PRINT TAB(28);"Y"; !194
```

```
240 PRINT "Created: "; !231
```

```
250 FOR B=0 TO 7 STEP 6 !231
```

```
260 IF B=0 THEN 280 !015
```

```
270 PRINT "Updated: "; !065
```

```
280 A$="" !234
```

```
290 B$="/" !027
```

```
300 FOR C=B+4 TO B STEP -1 !  
238
```

```
310 A$=A$&SEG$("0",1,2-LEN(S  
TR$(E(C))))&STR$(E(C))&B$ !0  
44
```

```
320 IF C>B+3 THEN 340 !084
```

```
330 B$=":" !038
```

```
340 NEXT C !217
```

```
350 PRINT SEG$(A$,1,6)&STR$(  
E(B+5))&" "&SEG$(A$,7,8)!193
```

```
360 NEXT B !216
```

```
370 NEXT A !215
```

```
380 END !139
```

Line 180 is the INPUT statement with the extra numbers appended. There is also an INPUT statement in line 150, but as this line reads the disk name, free, and used sectors, we do not need to append the time and date information onto it. Lines 240—360 print the time and date stamp. The program is written in console BASIC, but runs equally well in Extended BASIC.

### QUESTIONS & ANSWERS

Richardo Czarski of Jones, Oklahoma, asks several questions about the 9640. Among them are:

**How can you change the color of the MDOS screen?**

Unfortunately, there is no DOS function

currently available from the user level to change the color. Perhaps Myarc will decide to put one in — it would certainly be nice for all of us with monochrome monitors. In the meantime, John Johnson, SysOp on GENie, has uploaded a program called MYCOLOR, which is very short program to change the color of the MDOS screen. If you are on GENie, you can download it from there. The program is also available from some Users' Groups and private BBSes.

**Why did my clock lose nine hours in two weeks?**

This could happen for several reasons. It is important to decide if the clock did actually slowly lose the time over a two-week period, the way a slow clock would, or if it suddenly lost nine hours. If the former, you could have a defective (or dead) battery or clock crystal. If you think that that is the cause, you should contact Myarc. Having the clock suddenly lose time for no apparent reason could be the result of many causes. One would be a small power surge — the clock is a very delicate chip. Another would be a computer lockup — frequently when the computer locks up, the clock is changed or reset. You can reset the time and date with the TIME and DATE commands from MDOS.

**Will I always have to enter GPL mode to load MY-Word? What about the other programs, e.g. Multiplan and MY-Art?**

For now, MY-Word and Multiplan both run in 99/4A mode. With Multiplan, this is unlikely to change, since a large part of the program is written by TI and would require extensive changes to convert to 9640 mode. However, Myarc does have plans to convert MY-Word to run in 9640 mode, and thus load from the A> prompt of MDOS. Most new Geneve-specific products will run from MDOS. MY-Art is one such program.

**Is anyone doing anything about the caps lock reversal when GPL is loaded?**

This will probably be fixed, but it brings up an important point. Both the caps lock and num lock keys are sometimes reversed, showing the indicator light on when the internal status is off (or vice-versa). To fix this, simultaneously press CTRL and caps

(See Page 29)

## Geneve—

(Continued from Page 28)

lock or num lock. This will cause the internal status of the key to reverse, while keeping the light the same.

**How come the 9640 puts out RFI interference so bad, I can't use my rabbit ear's antenna on my TV two rooms away?**

I personally have not found that the 9640 itself puts out much interference — less, in fact, than the 99/4A console. However, some monitor cables (not the monitor itself, but the cable), especially those running to a composite monitor, have been found to put out incredible amounts of RFI interference. This is the case with my cable. To see if this is the case, try running the 9640 with the monitor cable unplugged, but the monitor on. If the problem goes away, it is probably the monitor cable. If that is not the cause, try turning off or removing various components of your system until you have isolated the culprit. For instance: turn off the monitor, remove the disk controller, remove the RS232, remove the Geneve. Do these one at a time. If indeed it is the 9640, you should contact Myarc for repair information. If it is in some other component of your system, contact the manufacturer of that product. If it is the monitor cable, I am not sure what to suggest. I

have not yet been able to find a solution. Perhaps one of MICROpendium's readers can suggest a fix?

**Steve Grob, of Dekalb, Illinois, asks if a VT220/VT100 terminal emulator program exists for the Geneve.**

Unfortunately, I do not know of any existing program to emulate the VT220/100 series. There are several authors working on terminal emulators at the moment, though, so perhaps one of them will add that capability.

A note on the Geneve version of the Myarc Disk Manager III program: You should not exit the program by pressing CTRL-SHIFT-SHIFT to exit to the GPL loader screen. Rather, you should exit in the normal fashion, by choosing "Goodbye" from the main menu. The reason for this is that the Myarc DM3 uses some cartridge space memory for buffers. Choosing Goodbye will cause this area of memory to be restored, but if you exit with CTRL-SHIFT-SHIFT, the program does not have the chance to restore the cartridge space — thus, that area of memory will require reloading.

A few people have asked me if the Geneve version of the Myarc DM had changed all three files, or just DM1 and DM2. All files have major functional changes, and you should not mix the three files from various versions.

*Readers with questions about the Geneve are encouraged to submit them to Dodd at 116 Richards Dr.; Oliver Springs, TN 37840. Answers will be published in this column.*

## REMIND ME!—

(Continued from Page 30)

new month and then move the text into daily windows.

The program disk contains two versions of Remind Me! The first is the standard REMIND program that loads as an E/A option 5, program image type file. A special loader, LOAD, is provided to load REMIND from Extended BASIC.

The second version of Remind Me! is called REMIND-SC. It can be loaded into a Super-Cart type of module allowing selection of Remind Me! from the power-up menu. The Super-Cart module (MICROpendium, June 1985) has 8K of battery backed RAM in the command module space. The commercial product is Super Space, available from DataBioTics.

The program is the only one I know of that will make use of several different real-time clocks. It will use the CorComp clock peripheral and Triple Tech clock, the MBP clock, the Myarc 9640 computer clock and the 8K DSR RAM project clock.

The manual is one thing I almost forgot to mention. It was written by J. Peter Hoddie and as you would expect is very well done. In fact, the clarity of the manual and the program design make learning to use Remind Me! effortless.

In conclusion, I use Remind Me! on a daily basis and would highly recommend it to anyone who uses a computer regularly. You'll be surprised at how useful it will be.

### NOTICE TO HOLDER BUYERS

We are temporarily out of stock of plastic holders for MICROpendium. We expect a shipment by the end of December. Orders will be shipped at that time. Thanks for your patience.

## THE HORIZON RAMDISK

192k of BATTERY-BACKED RAM  
for the 99/4a

\*\*\* NOW AT NEW PRICES \*\*\*  
build yourself with readily  
available parts or purchase  
192k-DSSD constructed card

**\$45** PC BOARD with MANUAL and  
SOFTWARE

**\$38** PC BOARD ONLY, no minimum  
purchase required

**\$195** CONSTRUCTED CARD, 90 DAY  
WARRANTY, MANUAL, SOFTWARE

Prices include shipping within N.  
America. Ohio orders add 6% sales  
tax. For ordering or information:

**HORIZON COMPUTER, LTD**  
P.O. BOX 554  
WALBRIDGE, OH 43465

## Remind Me!

# A computerized desk calendar

By JOHN CLULOW

Serving the same functions as a desk calendar, Remind Me!, by John Johnson, is easier, faster and more fun to use.

Remember what writing was like before word processors? The computer certainly made a big difference in how I felt about writing, and Remind Me! has had a similar effect on my use of the calendar for planning and recording daily events. In using Remind Me! at work, I was surprised at how many interesting applications it can have.

The central idea is a simple one. You select a month, and Remind Me! displays that month's calendar. Existing entries for the month are automatically loaded from disk. (If you have a real-time clock, the program uses the current date as the default and continuously displays time of day.) You can then enter or edit information for any day in the month, save the month's data on disk, load data for another month and even search for a word or phrase in all the daily entries.

The calendar display is the kind of monthly wall calendar we're all familiar with: rows of boxes with columns headed by day of the week. Each box has a number in the upper left corner to indicate the date. To select a date, you use the arrow keys to move a white bar. Once you have positioned the bar on the right date, you just press ENTER to open the "window" for that date.

The window is a large box, 12 lines of 38 characters, which looks like it's superimposed on top of the calendar. You can type text into the window using edit features like those found in TI-Writer and Editor/Assembler editors. When you have finished, you close the window with FCTN 9. Any days which have text stored in their windows are indicated by a white dot in the lower left corner of the box.

At the bottom of the screen, there's a prompt line showing the keys that activate Remind Me! functions: (L)oad, (S)ave, (P)rint, (E)rase, (F)ind, (C)onfig and (B)ye. Save and Load are used to transfer information to and from disk. By the way, the files are stored in D/V 80 format so they can also be loaded into TI-Writer if

## Review

### Report Card

Performance.....	A
Ease of Use.....	A+
Documentation.....	A
Value .....	A
Final Grade.....	A

**Cost: \$15 + \$1 postage and handling.**  
**Distributor: Genial Computerware, Box 183, Grafton, MA 01519.**

**Requirements: 32K memory, disk drive.**  
**Real-time clock, Supercart and printer optional.**

you wish.

The Print function lets you make neatly formatted hard copy for some or all of the days in a month. The output automatically provides for skip over perforation, and you can specify up to seven printer control characters to be sent before the actual text. The Configure function allows you to set up the printer name, control characters, and special characters to be used for horizontal and vertical lines. (If you want to send the output to a TI-Writer type disk file, you can specify a file name rather than a printer.

In addition, the Configure function allows you to set up the screen colors you prefer and the default drive that will be used to store your monthly calendar data. You can also specify the default day, month and year. If you don't have a real time clock, changing this data once a month will provide the current month and year as defaults when you enter the Remind Me! program.

As an example of the special attention given to ease of use, the Configure function does not create a separate file on disk the way many programs do. When you save the data for your configuration, you're actually saving a modified copy of the REMIND program itself with your requirements built in. This way you can load the program faster and don't have a separate data file to keep track of.

Find and Erase work together and greatly increase the utility of Remind Me! The

Find function allows you to search for a string in all of the entries for a month. The string can be up to 24 characters long, and upper and lower case are not distinguished. If the entry for a day contains the string, a check mark appears in that day's box. You can then move the bar to the days with a check to review their contents. The check marks stay on the screen to review their contents. The check marks stay on the screen until you use the Erase function. This means you can search for several different strings in a row and allow their check marks to accumulate on the screen. If you're using Remind Me as a daily diary of activities, the Find function comes in handy: You can very quickly pin down what day an event took place without having to read through lots of entries.

In addition to the windows for days of the month, Remind Me! provides a general purpose "Scratch Pad" window. This Scratch Pad appears when you press the space bar. You can use it to record reminders and notes that are not specific to a given day. It is saved along with all the daily entries when you save the month's data. If you are working on one month and then decide to load a new one, the Scratch Pad for the new month will be loaded. But if there are any blank lines in it, those lines from the previous Scratch Pad will be retained. You can use this feature to carry text from one month to another.

Control P prints the contents of the window on the screen at the time. Most of the function keys work the same as in BASIC or TI-Writer. For instance, Function 3 deletes the current line of text, Function 1 deletes a character, etc. Two exceptions are Function 5 and 6. Function 5 copies the current line of text from a window and retains it in a buffer as long as you're in the program or until you use Function 5 again. Function 6 copies the text from the buffer into the existing window. These two keys allow you to pick up text and put copies wherever you want, in other days or even in other months. Since the scratch pad is retained if a new month being loaded doesn't have one, you can copy lines into the Scratch Pad using Function 5 and 6, load a

(See Page 29)



## Certificate '99

# Make your own documents

By STEVEN D. MEHR

When I heard that Great Lakes Software was going to release Certificate '99, a certificate and sign making program for the TI, I couldn't wait to receive it. Having an immediate application for the program, I was anxious to start printing documents with my TI that were up until now quite difficult, if not impossible to produce.

Certificate '99 lets you create professional looking certificates, awards, diplomas, licenses, signs, advertisements, etc. Included with the program are 6 text fonts, which you can output in two sizes, 12 border designs, and 24 custom graphic designs. A supply of single sheet parchment paper and gold foil seals are also included to get you started right away.

**Ease of Use:** The program is very easy to use. The program may be loaded from either the Extended BASIC, Editor Assembler, Mini-Memory, or TI-Writer modules. After deciding on a method of loading the program, you are presented with a very nice title screen. Any key press at this point will bring up the message to either insert the data disk or flip the "flippy" disk (my version was on a floppy) and press a key. The program now searches the diskette for default information which is saved during each session.

The program can be broken down into six categories: Font Selection, Border Selection, Graphic Selection, Signature Selection, Text Entry, and Printer Output as described below.

**Font Selection:** You are presented with a menu of six different fonts to choose from with a sample, "ABC123", of what each looks like, WYSIWYG (What You See Is What You Get), a very nice touch used throughout the program. Although the sample characters are shown in uppercase, lowercase characters are also available for use in your certificate. After deciding on which font to use (only one per certificate is allowed) you are asked whether you would like your text auto-centered.

**Border Selection:** You now must choose from 12 border designs to use. Pressing any key will cycle through each border on

## Review

### Report Card

Ease of Use .....	A
Performance.....	C
Documentation.....	B
Value .....	B
Final Grade .....	B

**Cost: \$19.95 plus \$1.00 shipping**  
**Manufacturer: Great Lakes Software,**  
**804 E. Grand River Avenue, Howell, MI**  
**48843**

**Requirements: 32K memory, disk system, Epson/Star or compatible printer, and Extended BASIC, Editor Assembler, Mini Memory or TI-Writer**

the screen showing a sample of what each looks like, WYSIWYG. You may also choose not to have a border by selecting "No Border" from the menu. When your selection is on the screen, you simply press the ENTER key.

**Graphic Selection:** Now you may select a graphic design to include in your certificate from a menu, again WYSIWYG, of 24 graphic designs included with the program. You may also choose "No

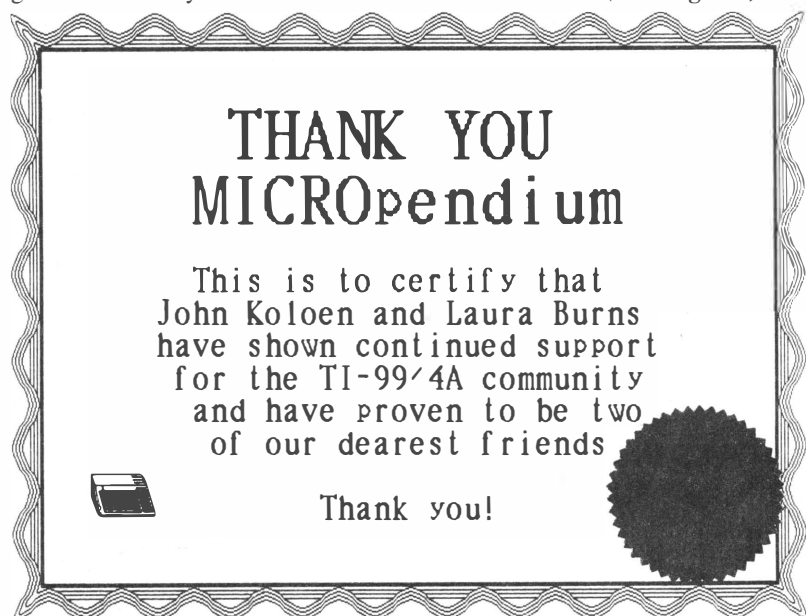
Graphic" if you desire. Selecting from this menu is the same as with the border menu, pressing Enter to make your selection. After deciding on a graphic to include, you have the option to magnify it.

The following option deals with the placement of the graphic on your certificate and is directly related to whether it is magnified or not. If you choose to magnify the graphic, you have six positions on your certificate to choose from, three across the top and three across the bottom. An unmagnified graphic is allowed to occupy three additional positions across the center for a total of nine positions to choose from.

**Signature Selection:** You may also include a signature in your certificate if you desire, from a menu of seven different personality figures. You may also select a blank line to add your own signature later, or no signature at all. After making this final choice, you may start to input your text.

**Text Entry:** You are presented with a full screen editor with two windows, one occupying the top half of the screen and one occupying the bottom half. The top window can be used for inputting large text like a title or heading, and the bottom win-

(See Page 32)



## CERTIFICATE 99—

(Continued from Page 31)

now for entering smaller text for the body of your certificate. You may choose to use the top window for entering large text only, the bottom window for small text only, or both for including large and small text together in your certificate. Since everything added to your certificate takes up space, like graphics and signatures, the text editor will graphically indicate these areas for you by highlighting them in both windows. Text entry is not allowed in these highlighted areas as they would be overwritten by your previous selections. As you enter text, the relative area in the opposite window you are entering text in is highlighted also. Using this technique of text entry, the program can format your input as you enter it, WYSIWYG, allowing you to visualize what your final creation will look like.

**Printer Output:** When text entry is completed, you must enter your printer device name and answer whether you want your certificate output in single or double-density. Single-density is fine for your first few drafts while double-density produces a much finer looking "suitable for framing" certificate. After answering these last few questions, your certificate begins to print. During printing, FCTN 4 is active to abort printing. After printing is completed, you are asked whether you want to continue. You are then asked for a number corresponding to a text and screen color combination. After entering this number, the program saves this information to your data disk and then responds to your choice of continuing the program or not. Although single sheet parchment paper was included with my copy, tractor feed continuous paper also works well.

**Performance:** The program performs well with a few complaints. First, the minor ones: The blue ribbon type graphic on the certificate shown on the title screen isn't available as one of the predefined graphic designs included with the program. I guess you are expected to create this one yourself. Some characters could have been created with more care for some of the fonts as the spacing between characters isn't always the same.

Text entry is somewhat slow when using FCTN 1 (delete) or FCTN 2 (insert), especially when auto-repeating. For exam-

ple, I found it faster to hold down the space bar over unwanted text than to use FCTN 1. Even though you have full screen editing when entering text in the windows, using FCTN E (up arrow) or FCTN X (down arrow) to move around in the windows seems a little sluggish. Also, there is no provision to exit text entry other than to move the cursor to the last line of the bottom window using the ENTER key or FCTN X (down arrow). Using FCTN 6 (proceed) or some other key to signal the end of text entry would speed things up quite a bit.

You also have the ability to select from four screen and text color combinations, saved at the end of your session, but you don't know what color choices are available until you save your choice to disk, and then create another certificate.

Another minor annoyance is the default settings. Upon running the program for the first time, certain defaults are set up by the manufacturer. After creation of your first certificate, every option selected is automatically saved to your data disk and will be used as defaults for your next session. This feature is nice, to a point. It would have been better to allow the user to save certain configurations to disk and have them called up from a menu. For example, if you use certain options most of the time, it is nice to have them appear as defaults such as a certain font or border. But suppose you need to create something totally different for a one time certificate, sign, etc. Your original defaults are now replaced with your one time selections. It appears that your selections throughout the program are saved to disk as you enter them, apparently allowing the use of FCTN 9 discussed later. Using a buffer to store this temporary information and asking at the end of your session if you would like your selections saved to disk as defaults would have been a more logical approach.

Another minor complaint involves the way the program handles centered text. When inputting centered text in which line of text is one character longer or shorter than another, the lines are aligned at one end, and are offset by one character at the other. It would have been more aesthetically pleasing to have the program center on half characters, if required, when printing your certificate.

The 24 graphic designs included with the

program can be modified to your liking by loading the graphic files into a graphics program, making your changes, and resaving them back to the data disk. But the two graphic files included, once modified, must be resaved using the original filenames. This allows only 24 graphic designs to choose from during each session, eliminating the possibility of having several different graphic files on your data disk to choose from. There is also no provision to modify either the six fonts or the 12 borders included. Does this mean the possible release of Certificate '99 Pal?

The text entry technique is unique but I would rather use a system closer to the CSGD type of text entry, using a pointer to indicate how much text can be entered. Although this would defeat the WYSIWYG concept used throughout the program, it might eliminate the 32-character maximum for small text entry.

Now for the major complaint: When at a prompt requiring a Y or N response, for yes or no, a key press of FCTN 1 or FCTN 2 will lock up the program. The only recovery would be to turn off the computer and reload the program. This obviously means losing all data entered during the session up to the point of lock up. As it would be highly unlikely for anyone to press these FCTN keys when the program is asking for a Y or N response, these key combinations should be ignored by the program eliminating the obvious frustration of discovery. I should also mention that the program successfully handles all other error conditions including disk drive and printer errors.

**Documentation:** The program comes with seven 8½x11-inch pages of documentation which includes a cover page, which is one of their advertisements, and a copyright notice at the end of the documentation for a total of five pages used for actual explanations on program use.

The documentation describes what hardware requirements are necessary to run the program, includes a short program overview, and gives instructions on how to load the program. The rest of the documentation is laid out in a logical format explaining program features as they would appear in running the program. When the documentation was written, however, there must

(See Page 34)

## MY-Art and the Myarc Mouse

# A winning combination

By JOHN KOLOEN

MY-Art is the first program written specifically for the Geneve 9640, and it is really a fine place to start. The program supports most of the features available in other drawing programs for the TI and one not available with any other — namely, the use of a mouse. In fact, MY-Art is useless without the Myarc mouse.

That's why you can't buy the Myarc mouse without MY-Art, and vice versa. This review is ostensibly about MY-Art, though inherently it is also about the mouse.

**Performance:** Anyone familiar with GRAPHX, TI-Artist or any of the other drawing programs should have no problem figuring out MY-Art. Even if you forget a command, there's no problem. The program includes online help screens that can be called up at any time.

What makes the program unique, of course, is the mouse. Briefly, the mouse is an input device that uses three keys and a ball. The ball is rolled against a mat-type surface and directs the cursor on the screen. The three keys are used to issue commands. The mouse doesn't work well on a hard surface. Users may purchase cloth-covered, foam rubber pads that are available commercially for about \$9 or make their own mouse pad with pieces of felt.

The mouse glides effortlessly on a Mouspad, a three-eighths inch thick slab of cloth-covered foam rubber. Response to movement is precise. The only time I noticed skipping was when I used the mouse on a hard surface.

The mouse plugs into the back of the Geneve card and must be connected before loading MY-Art. According to Myarc, the port is compatible only with a Myarc mouse. In fact, according to Myarc, use of an incompatible mouse could blow the 9640 board.

In conjunction with MY-Art, the mouse has great utility. (Other than some routines published in MICROpendium, I know of no other program that can take advantage of the mouse.) Perhaps the most appealing thing about the mouse and MY-Art is the manner in which they enhance even my

## Review

### Report Card

Performance.....	A
Documentation.....	A
Ease of Use.....	A
Value.....	A
Final Grade.....	A

**Cost: \$125 (mouse and MY-Art)**

**Manufacturer: Myarc Inc., P.O. Box 140, Basking Ridge, NJ 07920**

**Requirements: Geneve 9640**

limited drawing ability. I am not one of those who finds excitement in spending hours creating drawings on a computer screen. With previous programs I found that I lacked the skill and patience to manage even moderately good work. Cursor control was never as precise as I desired, and resolution or the lack thereof often turned a fine line into a jagged edge. Not so with MY-Art and the mouse.

MY-Art supports two modes of resolution: 256x212 pixels with 256 preset colors, and 512x212 pixels with 16 basic colors and the ability to create any other col-

or by mixing any combination of the basic 16. Mixed colors are saved to disk along with pictures. The higher resolution provides the sharpest looking pictures. However, it's not possible to toggle between the two modes without losing the picture in memory. The program boots up in 256 resolution but is easily switched to 512 by pressing CTRL M.

I mentioned that the mouse has a row of three buttons. Each has at least one function in MY-Art. For example, clicking the lefthand button toggles the color selection bar at the bottom of the screen. Clicking the righthand button causes the color bar to scroll across the screen, revealing all 256 color selections. (There are so many colors in the 256 mode that the entire spectrum, or palette, can't be viewed without scrolling.) Clicking the middle button while in the pencil drawing mode results in erasure of the most recently drawn line.

Pressing a button, holding it down, also has a role to play, versus mere clicking. For example, to draw a line in the pencil mode hold down the center button while moving the mouse. Releasing the button "lifts" the pencil off the screen, so to speak.

(See Page 34)



## MY-ART—

(Continued from Page 33)

Icons are used throughout MY-Art to represent various functions. A pencil appears on screen when the pencil mode is selected. A teapot appears when the fill command is issued. A magnifying glass appears when the zoom mode is selected. When the level of magnification is at its highest, the magnifying glass turns into a microscope.

Most functions operate in a similar fashion, with a key used to activate it and the mouse used to determine coordinates. Other features of MY-Art include:

**Icon speed control** — This lets the user exercise as much control as he wants over the cursor.

**Fill** — select a color from the palette, place the teapot icon's spout where the color fill is to be done and click the mouse.

**Straight lines** — The line appears like a rubberband between the two points until the button is clicked.

**Drawing circles** — Circles may be created from the radius (center) or from the diameter.

**Boxes and rectangles** — Rectangles may be created as outlines or as solid boxes.

**Icon color** — CTRL S is used to toggle a series of colors used for the icon.

**Cutting and pasting** — Areas of a picture may be moved or duplicated.

**Text** — Text may be input in a number of sizes up to the height of the screen. Text may be rotated. Only one font is available at this time.

An Undo and erase function are activated by the center button. "Undo" undoes the most recent action.

MY-Art also supports a number of disk functions, including formatting, cataloging, and saving and loading of pictures.

Outputting of images may be done only with an Epson or Epson-compatible printer.

Images may be output in two sizes. The larger size is printed sideways on the paper. Two resolutions are also offered: outline or "gray scale." Although the screen image is in color, there is no provision for outputting color images. Colors are outputted as varying shades of gray.

At this time, MY-Art cannot use any art created with any other drawing program. Nor can it access fonts from any other program. I have been told that there is some

third-party development going on in terms of fonts and graphics but I'm not sure how these would be accessed by MY-Art. Unlike GRAPHX, TI-Artist and other similar programs, MY-Art doesn't have a load routine to merge fonts or Instances.

As a drawing program, MY-Art is a fine piece of work. It provides most of the graphics capabilities that I look for and is capable of being used with great precision. I think direct comparisons with drawing programs for the TI99/4A are difficult on a point by point basis. There are elements in the TI programs that are missing from MY-Art that could only have made it a better program. (The ability to import pictures, clip-art and fonts are three useful functions and I appreciated the drawing grid that could be used with GRAPHX to help block out the dimensions of a drawing.) However, the main feature of MY-Art and what puts it in a different class is the mouse, and it definitely enhances the act of drawing over what is possible through keyboard or joystick input.

The ability to zoom in on an area at the pixel level, coupled with complete control over the speed of the icon, provides the user with as much control over drawing as one can expect to have.

**Documentation:** A 12-page manual accompanies MY-Art, and it's packed with information. It includes a detailed table of contents and a summary of commands on the back page. Each feature of MY-Art is described individually, with instructions on how to use it. The text is clearly written and easy to understand. The manual is backed up by online help screens, a feature that I wish other application programs would incorporate.

**Ease of Use:** MY-Art and the mouse are easy to use. The learning curve is very short. Virtually all functions are implemented by the press of a single key. Although this was not noted above, the ability to directly access functions is a distinct advantage over menu-driven drawing programs. It unclutters the interface between user and software by eliminating the need to leave a function, and call up a menu in order to access another function. This saves time and enhances the creative use of the program.

**Value:** The \$125 list price for mouse and My-Art represent a good value. It's

competitive with the pricing of similar devices for other computer systems. The Myarc mouse appears to be well-built and will probably last a long time under normal use.

Putting a price on MY-Art itself would be difficult, but \$50 isn't unreasonable. (The disk includes several examples of extremely detailed art-work created with MY-Art. The Geneve swan is another example.) If there is a drawback on MY-Art it is that it can't import existing fonts, clipart and drawings from other programs.

As a drawing tool, a mouse can't be beat. No combination of keyboard and joystick input can compete with the fluid motion of a mouse. Once you've used it, you'll never go back to anything else.

## CERTIFICATE 99—

(Continued from Page 32)

have been only a floppy version, as it states flipping the disk over during loading. This may be confusing to someone who purchased the program on two separate diskettes as this conflicts with the instructions on screen when the program loads. Maybe the two-disk version instructs the user to remove the program disk and insert the data disk.

The documentation states to tap the space bar to cycle through each border, and each graphic. This is partially true. In fact, any key press will do (including FCTN 1 and FCTN 2) as long as FCTN 9 or Enter are not pressed. The documentation gets a little fuzzy explaining the signature option. The program flow does not quite follow the series of events in the example included in the documentation. I found I had to experiment a little to find out why. The documentation says to magnify the graphic for the sample certificate. Doing so will conflict with what happens next, according to the documentation. If you choose not to magnify the graphic, everything happens as the documentation states when you reach the signature option. The rest of the documentation was found to be accurate and I found no other inconsistencies.

The documentation also includes an "Additional Comments" section including (See Page 36)

# Newsbytes

## Columns on disk

Jim Swedlow writes that he notices user groups occasionally reprint one of his columns in their newsletters. He says that all his columns are available on disk, 20 in the XB series and 17 in the TIT BITS series.

Swedlow notes that anyone interested can send him a note advising the series they want, the requisite number of formatted disks, and a return mailer and postage to receive the disks at no charge. Each series requires two SSSD disks or one DSDD disk.

He says the columns are public domain material, but says newsletters publishing them should mention the author and the original publication, the User Group of Orange County, California, ROM.

For further information, write Swedlow at 7301 Kirby Way, Stanton, CA 90680.

## Printer aid released

McWare Products has released Fast & Easy Tutor for the Star NX10 printer.

Fast & Easy Tutor includes a booklet with examples and explanations and a disk designed as an interactive tutor. Programs are available for the TI99/4A; Commodore Plus4, Vic20, C64 and C128; Sanyo MBC 550/555; and IBM compatibles.

The disk and booklet are available for \$12.95 plus \$2 shipping and handling from McWare, P.O. Box 2784, Fairfax, VA 22031.

## TI-IBM file transfer program available

Robert C. Holland of San Diego, California, has written a file transfer program which will both send and receive files for the TI and IBM computers.

The TI program is written in Extended BASIC and the IBM in Turbo Pascal.

To operate, the program requires a serial cable to connect the computers through an RS232 port.

He says he has operated the program using a TI disk controller and that it has not been tested using other disk controllers.

He says that the program will transfer all types of files. However, he notes, display file transfers "work better" in that internal type files run into difficulty because the

IBM and the TI read some characters differently.

He says that the program works with strings which the computer reads as lines of text to transfer. He notes that the transfers are faster from the TI to the IBM.

Holland says there are plans to post the program on the bulletin board of the Southern California Computer Group or it is available from him by sending him two double-sided, double-density disks with mailer and postage at 6188 Caminito Baeze, San Diego, CA 92122.

## Memory card slated by Rave 99 this month

Rave 99 is scheduled to release its new Memory Enhancement Card system, which allows up to two megabytes of backed-up RAM memory for the TI99/4A, in December, according to company president John McDevitt.

The card allows memory expansion for up to 544 bytes. Up to four memory cards may be installed in the peripheral expansion box, he says.

The company lists the following features:

- Special "memory mapping" of addresses >4000 -> >7FFF allows an extra 16K bytes of memory for assembly programs which allows programs up to 48K long without any user memory mapping required.

- Two 8K bytes "backed-up" DSRs are provided, one reserved for the system software, the other for the user.

- Memory backup is provided by two methods:

- 1) The card is designed to back up the memory for about five days without the use of batteries or external power source. Each time the system is powered on, the card "recharges" itself automatically.

- 2) To extend the backup time beyond five days, an optional lithium battery may be installed which provides backup for months.

- Memory management software is supplied controlling the memory bank switching on the card, GROM space access and loading of programs into the DSR memories. System "CALLs" from (X)BASIC allow the selection of the 32K memory bank to map into the computer as well as enabling/disabling the GROM memory space

(>6000 -> >7FFF).

- Non-DSR space—The memory at address space >4000 -> >5FFF is used normally to map in a Peripheral Device Service Routine. When a device's DSR is not mapped in, this memory space goes unused. Now, 8K are mapped in when no other DSR is active.

According to the company, all software originally programmed to run on the TI 32K memory expansion card is compatible. McDevitt says advanced programs which take advantage of the additional memory are Rye Data's Command DOS, R. A. Green's Macro Assembler and DataBioTics' Software Support Loader.

Requirements are a TI99/4A with PE box. The Memory Enhancement Card is said to be compatible with the TI RS232 card, TI disk controller card, Myarc disk controller card, Horizon RAM Disk and Rave 99 Speech Adapter Card. McDevitt says other cards may work, but have not been tested.

The card is available in three models:

- Model MX01/64 at \$199.95 includes 8K of memory at >6000 -> >7FFF, 8K non-DSR memory, 8K system DSR memory, 8K user DSR memory and 32K main memory. Only very low-power memories are used. It includes advanced memory backup design and expansion sockets to increase memory to 544K.

- Model MX01/288 includes all the features of the model MS01/64 with additional memory included to have 256 bytes of main memory.

- Model MX01/544 at \$399.95 includes all the features of the model MX01/64 with additional memory included to have 512 bytes of main memory.

Individual, very low power 32K x 8 static RAMs are available. Price is \$18.

For further information, contact Rave 99 Co., 112 Rambling Road, Vernon, CT 06066 or (203) 871-7824.

*Newsbytes is a column of general information about products and services related to TI and 9640 users. The publisher does not necessarily endorse products listed in this column. Vendors, manufacturers and others are encouraged to submit items for consideration. Photos will be used when space permits. Materials cannot be returned*



# User Notes

## Charlton offers graphics loader

Paul Charlton is offering a GIF graphics loader for the 9640 via national telecommunications services. The program will take pictures in GIF format, which can be used by many computers, and display them

or convert them to MY-Art format. It handles higher resolutions than the RLE (Run Length Encoded) files which have been available for the 4A. The file is a preview version of a forthcoming commercial release of the software. The cost of the loader is \$15. Charlton promises a substantial discount on the commercial version for those who pay the \$15 for the loader.

## Reader to Reader

Lee D. Renda, 1762 Mahoning Ave., Youngstown, OH 44509, would like to know where he might obtain any software for a TI99/8 and to get in contact with any other TI99/8 owners. He also needs information on a PHP 1290 video controller card.

Michael Miller, 8901 Utah Court, Thornton, CO 80229, is looking for information on the Mechatronics 128K GRAM Karte, e.g., any utilities anyone may have written for it, compatibility with hardware

and other information from GRAM Karte users.

A digit was left out of Harold K. Liter's address in the Reader to Reader column in November. His correct address is 732 W. 147th St., Gardena, CA 90247.

*The Reader to Reader column is designed to put readers in touch with each other. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit an item.*

## CERTIFICATE 99—

(Continued from Page 34)

information on using FCTN 9. This will take you back one screen at a time until you are back at the first menu. Also mentioned is the help file, stating that this file contains quick directions about using the program. Though they gave it a logical filename, "RUN-ME!," it is no more than a program which reads a help file and displays on screen how to load the program.

Information is also offered on how to modify the graphic files which come with the program. Although the example explains using Joy Paint '99 or Joy Paint Pal, several other graphic programs are compatible with the graphic files included with Certificate '99.

Also stated is the comment that encrypted information such as your name, address, version number and so on is placed on the disk to thwart the potential pirate. Makes sense to me, except why encrypt the version number? Maybe to further confuse the pirate? I really don't know. This is the only place that the version number exists

on the diskette, making it impossible for the legitimate user to know.

**Value:** Throughout this review, no comparison was made between Certificate '99 and any similar program running on any other computer. For this reason the program was judged on its own merits as it performs in the 99/4A operating system environment. Although it may appear that I have been quite critical throughout this review, I do feel that Certificate '99 offers a fair value for the money.

**Final Grade:** Like most other program we purchase for our computer, there are some things we like and some things we dislike. All things considered, I feel that Great Lakes Software has produced a potential winner. It does what it's supposed to do quickly and easily, allows you to print documents with your TI that were up until now quite difficult, if not impossible to produce, and just needs a little polish here and there. I'm sure the next release of Certificate '99 will address these areas. Until then, my Certificate '99 disk will get its share of use with my TI. As they say, "A spinning disk gathers no dust!"

## Put XBASIC into your 4A console

Chuck Reinhart, of Bellaire, New York, has contributed a number of utility programs in the past and now has a project to locate Extended BASIC in the 4A console.

This project is to be undertaken only at the user's risk. It is not simple and should not be attempted by those who are unfamiliar with electronics and soldering.

Reinhart recommends that solder be used sparingly. "There are land patterns that run between the pins. Also, use a small soldering iron."

After this modification, you will not be able to have a cartridge installed while running Extended BASIC. Read the following instructions thoroughly before starting the project.

### PARTS LIST

- 1 56K resistor 1/4 watt
- 1 DPDT mini switch (Radio Shack 275-626)
- 2 8 in piece of ribbon cable with 17 conductors in each (Radio Shack 278-772)
- 5 in pieces of wire

### INSTRUCTIONS

Remove the main board from the console.

Remove the cartridge port and metal shield from the main board.

Remove the Extended BASIC circuit board from its case.

Take the two pieces of ribbon cable and separate the wires in the four ends back one inch. Then strip all of the wire 1/8-inch and tin the bare ends. Mark one cable TOP and the other BOTTOM.

Place the main board component side down with the side port connector on the right. Locate the two rows of pins that go to the cartridge port (see main board diagram).

Take the cable marked BOTTOM and mark a 1 on the edge at both ends. Then solder the wires from one ends of the cable to the bottom row of pins skipping pin No. 4. Keep the wires in order with pin No. 1 on the right (see main board diagram). Solder one of the 8 in wires to pin No. 4

(See Page 37)

# User Notes

(Continued from Page 36)

and one 8 in wire to pin No. 9 (pin No. 9 will have 2 wires). Place a piece of black electrical tape on the circuit board under the cable to prevent shorts.

Take the cable marked TOP and mark a 1 on the edge at both ends. Then solder the wires from one end of the cable to the top row of pins, skipping pin No. 2. Keep the wires in order, with pin No. 1 on the right (see main board diagram). Solder one of the 8 in wires to pin No. 2.

Place the XBASIC circuit board with component side up and connector facing the cable marked TOP. Solder the wires to the connector, skipping contact No. 2 (see circuit board diagram). Solder an 8 in wire to contact No. 2.

Turn the circuit board over and solder the wires from the cable marked BOTTOM, skipping contact No. 4, to the contacts on the foil side of the XBASIC cartridge (pin No. 1 TOP should line up with pin No. 1 BOTTOM). Solder an 8 in wire to contact No. 4.

Solder the 5 wires and 56K resistor to the switch (see switch diagram).

Bend the edge of the metal shield to allow room for the cable to pass. Mount the XBASIC cartridge on a piece of cardboard and tape it to the top of the metal shield to the left of the cartridge port.

Mount the switch in the back of the console cover near the center.

Check the wiring with an OHM meter from the cartridge port to the XBASIC circuit board connector.

Clean the side port and cartridge port.

Reassemble the console and test the switch in both positions.

Once again, don't attempt this unless you are sure of your skills and understand the instructions.

## Picture demo writer

This comes from Robert Coffey Jr., of Tonawanda, New York.

Picture Demo Writer is a companion to Display Master. It is fairly easy to use if

you are already familiar with Display Master! If you are not familiar with it, then I suggest you read the documentation, as the rest of this documentation will draw from your knowledge of Display Master.

One note, if you don't have Display Master, it is a program that lets you use pictures compatible with TI-Artist, and will let you demo those pictures, as well as present them in a professional slide show.

Basically what you do to run Picture Demo Writer is load it into Extended BASIC, and RUN it.

After it starts, you will be prompted for a drive number. Enter the drive that has the pictures on it (which is the same drive you will have it in when you run Display Master!).

Next, it will prompt you whether you want to use the Pause or Delay feature of Display Master. If you select Delay, it will also prompt you for the time delay you wish to use in seconds.

Now it will prompt you for a filename, DEMO is the default, to which it will write the command file, that you run in Display Master.

Now it will run through the disk and only pull out *only* the pictures and write them into the command file.

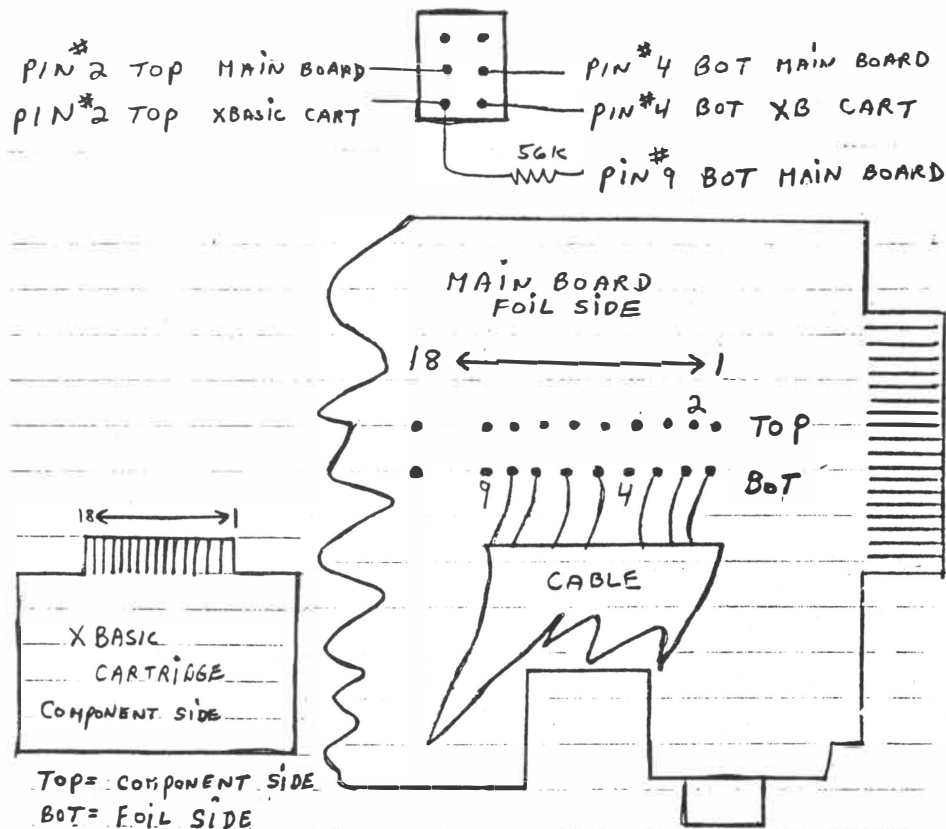
After it is done, you will load in Display Master and load the command file, and it will automatically start executing. It will run through all of the pictures using the Pause (until key pressed) or Delay you chose. After it runs thru all of the pictures, it will return you back to Display Master.

```

100 ! PICTURE DEMO WRITER V
1.0 !038
110 ! WRITTEN ON 4/27/87 !02
3
120 ! BY ROBERT COFFEY JR. !
242
130 ! 102 WOODGATE ROAD !
086
140 ! TONAWANDA, NY 14150
!174
150 !!131
160 LENGTH=20 :: FILES=".DEM
O" :: MODES="D" :: SOURCE=2
!240
170 DISPLAY AT(2,3)ERASE ALL
:"PICTURE DEMO":
(See Page 38

```

## SWITCH



# User Notes

(Continued from Page 37)

```

" WRITER V 1.0": : "
by Robert Coffey Jr." !21
5
180 DISPLAY AT(9,1): "Source
drive for pics>";SOURCE :: A
CCEPT AT(9,24)SIZE(-1)VALIDA
TE("12345"):SOURCE !028
190 DISPLAY AT(11,1): "Pause
or Delay (P/D) > "&MODE$ ::
ACCEPT AT(11,24)SIZE(-1)VALI
DATE("PDpd"):MODE$ !110
200 IF MODE$="P" OR MODE$="p
" THEN 220 ELSE DISPLAY AT(1
3,1): "Length of delay (sec)
>";LENGTH :: ACCEPT AT(13,25
)SIZE(-3)VALIDATE(DIGIT):LEN
GTH !081
210 IF MODE$="d" OR MODE$="D
" THEN FLAG=1 ELSE FLAG=0 !0
88
220 DISPLAY AT(15,1): "Demo f
ilename>DSK"&STR$(SOURCE)&FI
LES$ :: ACCEPT AT(15,20)SIZE(
-12):FILES$ :: FILES$="DSK"&ST
R$(SOURCE)&". "&FILES$ !185
230 DISPLAY AT(18,8): "Workin
g..." !215
240 OPEN #1:"DSK"&STR$(SOURC
E)&".",INTERNAL,RELATIVE,INP
UT :: OPEN #2:FILES$ :: INPUT
#1:BUFF$ !035
250 FOR X=1 TO 127 :: INPUT
#1:BUFF$ :: IF BUFF$="" THEN
290 ELSE IF POS(BUFF$,"_P",
1)=0 THEN 280 !218
260 PRINT #2:".CLEAR;" :: PR
INT #2:".LOADPIC "&CHR$(34)&
"DSK"&STR$(SOURCE)&". "&SEG$(
BUFF$,1,LEN(BUFF$)-2)&CHR$(3
4)&";" !172
270 IF FLAG THEN PRINT #2:".
DELAY "&STR$(LENGTH)&";" ELS
E PRINT #2:".PAUSE;" !030
280 NEXT X !238
290 PRINT #2:".STOP;" :: CLO
SE #2 :: CLOSE #1 !248
300 DISPLAY AT(18,7)BEEP: "
D O N E !": : : " Do an
other ?" !093
310 CALL KEY(0,K,S):: IF K<>
78 AND K<>89 AND K<>110 AND
K<>121 THEN 310 !250
320 IF K=78 OR K=110 THEN EN
D ELSE FILES$=SEG$(FILES$,5,LE
N(FILES$)-4):: GOTO 170 !081

```

## TINYHUSTLE for modem users

TINYHUSTLE is another in the long line of Tiny Grams by Mike Stanfill of the Dallas TI Home Computer Group. What's unusual about this Tiny Gram is that it requires a modem (or direct connect RS232) to operate.

TINYHUSTLE is modem version of TI's Hustle game. The rules are simple: You move your character (the blue square) with the arrow keys. As you move, you'll leave behind a trail of O's, which you will use to encircle your opponent's X's. The object is to force the opponent to run into your trail of O's or the border walls, whichever comes first. Of course, your opponent will be trying to do the same thing to you.

To play, go online with your opponent. The program is set for 300 baud but users may modify baud rate to conform to their modems. Decide who is going to move first. Both players should then run the program on their respective 4As.

Once the program is running at both ends, the players will be prompted as to which will move first. Press the appropriate key (1 or 2) and then press Enter. The player going first should wait a moment so that the opponent's program will have reached the proper place. (The first thing the program will do for player No. 2 is go to line 9 and wait for an input. If player No. 1 starts too soon, he will pass information before player No. 2 is in a position to receive it.)

To move the square, press an arrow key. Once the key is pressed, the square will continue to move in that direction until it encounters a wall or border.

The game is equipped for scoring and sound. The game requires Extended BASIC and an RS232 port. A modem is necessary unless players connect their RS232 ports with a cable.

```

1 !*****TINYHUSTLE*****
*****A TINYGRAM*****
***BY MIKE STANFILL***
*****MEMBER DTICOT*****
!191
2 CALL CLEAR :: INPUT "R U 1

```

```

ST OR 2ND?":P :: Q=P :: OPEN
#1:"RS232.EC.LF",INTERNAL !
061
3 B=0 :: CALL CLEAR :: P=Q :
: CALL COLOR(2,5,5,5,7,7)::
Y=6-(P-2)*19 :: G=1+(P-2)*2
!182
4 X=12 :: F=0 :: CALL HCHAR(
23,1,64,96):: CALL VCHAR(1,3
1,68,96):: DISPLAY AT(24,1):
" YOU=";U;" HIM=";M !049
5 ON P GOTO 6,9 !197
6 CALL KEY(1,K,S):: IF (K=2)
+(K=3)+(K=0)+(K=5)<0 THEN F=
(K=5)=(K=0):: G=(K=2)=(K=3)!
000
7 CALL HCHAR(X,Y,88):: X=X+F
:: Y=Y+G :: CALL GCHAR(X,Y,
C):: H=X :: J=Y :: CALL HCHA
R(X,Y,40):: PRINT #1:H,J,C !
099
8 M=M-(C<>32):: GOTO 10 !083
9 INPUT #1:H,J,C :: CALL HCH
AR(H,J,79):: U=U-(C<>32)!116
10 IF C=32 THEN P=P+1 :: P=P
+((P-3)*2):: GOTO 5 ELSE B=B
+1 :: CALL SOUND(-99,110,B,-
7,B):: ON (B-30)+2 GOTO 3,10
!174

```

*User Notes is a column of tips and ideas designed to help readers put their computers to better use. The information provided here comes from many sources, including TI user group newsletters. MICROpendium pays \$10 for any item sent in by readers that appears in this column. Mail User Notes to MICROpendium User Notes, P.O. Box 1343, Round Rock, TX 78680.*

## Classified

### Software

#### BA-WRITER V 1.4 UPDATE

BA-WRITER V 1.4, now available, is the Mail Merge Active version. It is compatible with all known peripherals (Horizon RAM Disk placed at CRU above >1100 included). It will be distributed by:

Mrs. LaVerne Searcy  
10767 Jamacha Blvd. #175  
Spring Valley, CA 92077.

v4,n11

# Classified

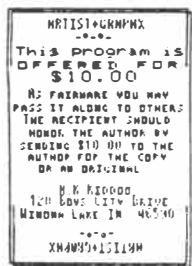
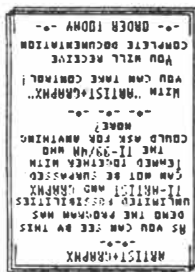
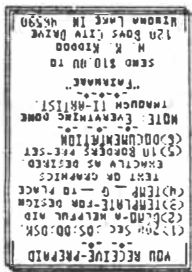
## Software

### WRITE YOUR OWN TITLES

Video "movie" makers, give that special touch to your productions. Create professional titles with the Roll Credits title generator. For more info send SASE to: Newcastle Enterprises, P.O. Box 31881-MP1287, Phoenix AZ. 85046. v4,n11

### CHECKBOOK RECONCILE \$29.95

Balance to the penny every month. Rocketman Checkbook Program. See our program review in August 1987 MICROpendium. California Programs, 4426 Appian Way, El Sobrante, Ca. 94803. 415-222-1626. v4n12



## Systems

### TI99/4A SYSTEM

Console, PE Box, controller, RS232, 32K, SSSD drive, cables, Gemini 10X dot matrix printer 2 new printheads, cables, manuals, much software, books. Excellent condition. Price negotiable. Ivan Kaufman, 9606 Shadydale Lane, Dallas, Texas 75238, 214-349-6278 v4,n11

### FOR SALE 128K COMPUTER

Commodore business B-128 computer 1.4 meg drives, printer, software. Cost \$5000 asking \$750 or trade for Geneve

## Policy

The cost of classified advertising is 25 cents per word. Classified display (i.e., special formatting or graphics) is \$9 per column inch. Classified advertisements must be paid in advance. Classified advertisers may request a category under which they would like their advertisement to appear, but the final placement decision is the responsibility of the publisher.

Classified deadlines will be kept open for as long as practical. For the purpose of classified advertising deadlines, any classified ad received later than the first day of any month cannot be assured of placement in the next edition. We will do our best to include every advertisement that is submitted in the earliest possible edition.

The publisher offers no guarantee that any advertisement will be published in any particular issue. Any damages that result either from errors in copy or for failure to be included in any particular edition will be limited to the amount of the cost of the advertisement itself. The publisher reserves the right to reject any advertisement.

The advertiser may elect to publish the advertisement in subsequent editions at the same charge, payable prior to publication. The deadline for carryover classifieds is the same as for new advertising.

In submitting an ad, please indicate whether you would like a refund if it is not published in the requested edition or whether you would like us to hold it for the next edition. Cancellations and refunds cannot be made after the second day of the month.

Send classified advertising to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

## Systems

9640. TIRS232, \$125, full P-box. Other items for sale or trade. (216) 793-3684 11AM-8PM v4,n11

### FOR SALE

Deluxe TI-99/4A system \$500: 2 consoles, w/extra keyboard and speech, P-Box, RS232, 32K Card, Cor-Comp disk controller, 2DSDD 1/2 Height Drives; XB, E/A, TI-Writer, TEII, Multiplan; AP-PROX 150 disks, Utilities, Business, Super Basic, 4A-Talk, Cart, Expander, Documentation, Books, Magazines, Service Manuals, etc. Ed Schaper, 745 Straub Rd., Ballwin, MO 63011, 314-227-1531. v4,n11

## Wanted

### WANTED TO BUY

MG GRAM Kracker, Term Emulator I, TI99/2 Computer. I need a PHD 5068 course designer disk, PHD 5092-97 TI Count disk. Call (216) 793-3684 11 AM-8 PM v4n11

## Miscellaneous

### FOR SALE

32K Stand Alone \$89.95, Volksmodem + Cable + TEII \$59.95, Beginners BASIC Tutor \$3.95, TI Keyboard \$5.95. Add \$3.00 shipping & handling. MC/Visa call 1-216-399-5463. YOUNG-TREE PO Box 197 Leavittsburg, OH

## Miscellaneous

44430. Price list sent with order or send \$2.00 (refunded with 1st order). v4n11

### Texas Instruments

#### TI-99/4a

#### Hardware & Software

DataBar, MG, Myarc, Star, McCANN, Proto-Board Bonyard Bk, Modems, Cables, Printers, Books.

\* Joysticks by Amiga for the TI \* \$12.00

\* PerCom Disk Drive/w Controller \$225

Speech Editor \$20, Side Port Ext. Cable &

Cart-Port Ext. Cable \$25 ea, Plato \$45

\* P-Code Card/w Software \$159. TI Manuals

9900, 9901, 9902, 9904, 9918, 9919, 9995 CALL

TI Extended Basic \$39, used Consoles \$60

TPA \$22.50 & Font Disk 1 \$11.50 same day UPS

Yes, we stock most Hardware & Software

If We Don't Have it, We Can Get it!

**L.L. CONNER ENTERPRISE**

**COMPUTER & ELECTRONICS**

**1521 Ferry Street**

**Lafayette, IN 47904**

Call 317-742-8146 or 317-423-4879

v4,n12

Visa or M/C Accepted

K

99/4A P-CODE CARD WITH ALL DISKS AND MANUALS	\$149
PE-BOX/RS232/32K/DRIVE/CONTLR	\$349
TI-WRITER NEW	\$ 29
TI ORIGINAL RS232 CARD	\$105
PARALLEL PRINTER CABLE	\$ 15
TI MULTIPLAN (NEW)	\$ 19
STAND-ALONE DISK DRIVE (NEW)	\$ 99
TI ORIGINAL 32K MEMORY CARD	\$ 99
TI ORIGINAL COLOR MONITOR	\$199
HAYES COMPATIBLE MODEM	\$ 12

s&h 5%

CALL OR WRITE

JIM LESH  
722 HUNTLEY  
DALLAS, TX. 75214  
214 821 9274

v4,n11

# The LEADING monthly devoted to the T199/4A

## Subscription Fees

\$20 for 12 issues via domestic second class mail  
 \$25.25 (U.S. funds) Canadian or Mexican delivery  
 \$23.50 (U.S. funds) for 12 issues foreign delivery  
 via surface mail

\$37.00 (U.S. funds) for 12 issues foreign delivery  
 via air mail

**Outside U.S., pay via postal or international  
 money order; personal checks from non-U.S.  
 banks will be returned**

## Address Changes

Subscribers who move may have the delivery of their  
 most recent issue(s) delayed unless MICROpendium is  
 notified six weeks in advance of address changes. Please  
 include your old address as it appears on your mailing  
 label when making an address change.

## Back Issue Policy

Back issues of MICROpendium are available to subscrib-  
 ers only. Those wishing back issues may notify us of the  
 issue(s) desired and include \$2.00 per issue desired in  
 a check or money order. No shipping charge in U.S.,  
 Canada and Mexico; Texas residents add 7% sales tax.  
 For foreign delivery, add 50 cents per issue surface mail,  
 \$2 per issue surface mail. No discounts on orders of sets.  
 All prices U.S. funds. **OUT OF STOCK: Vol 1, nos. 1-2**

## Tell us about it

Please let us what columns or features you like the  
 most about MICROpendium. Rank your selections in  
 order of preference using this form. Return it to us when  
 you renew your subscription.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Other suggestions: \_\_\_\_\_

Send me the next 12 issues of MICROpendium. I am  
 enclosing \$ \_\_\_\_\_ in  
 a check or money order in U.S. funds. Mail to:  
 MICROpendium, P.O. Box 1343, Round Rock, TX  
 78680

**Name** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_

**State** \_\_\_\_\_ **ZIP** \_\_\_\_\_

**The set of numbers on the right of your mailing label  
 indicates the cover date of your last issue.**

v4.n11